Today's Health

PUBLISHED BY THE American Medical Association

MAY 1961 FOR THE AMERICAN FAMILY 35¢

American Medicine in Foreign Lands

Whooping Cough

Aspirin and Antibiotics

Ohio River Valley Vacations

Plan Your Own Security

Doesn't everybody know all Heinz Baby Foods have screw-on caps?

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COMING NEXT MONTH—

Suntan in a Bottle: How Safe? How Effective?

Millions of Americans will spend millions of dollars this year on chemical tanning lotions—those "magical" preparations advertised to produce a "tan" without sun. Before investing in these products, you will want to learn how they work, what they do to your skin, what dermatologists say about their safety and effectiveness. Bonus: tips for sun-bathers, including the latest data on suntan pills.

How to save ¼th the cost of modernizing your kitchen

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Today's Health

PUBLISHED BY THE American Medical Association

FOR THE AMERICAN FAMILY

May 1961

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TODAY'S HEALTH articles are indexed in Reader's Guide to Periodical Literature.

The American Medical Association does not necessarily endorse all of the material appearing in this publication.

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Cover photos: Christian Medical Society; Smith, Kline & French Laboratories.

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American Medical Association

TODAY'S HEALTH is published monthly by the American Medical Association. Yearly subscriptions: U.S., U.S. Possessions, and Canada, $3; other foreign countries, $5. Single copy, 35 cents. Volume 39. Number 5. Printed in U.S.A.

Second-class postage paid at Chicago, Illinois, and additional mailing office.

Address all communications to Today's Health, 535 North Dearborn St., Chicago 10, Ill.

a letter from STAN DELAPLANE

THE REAL HAZARD to a traveling correspondent is not the trip. It's the homecoming.

"What did you bring me?" said my young miss.

"A heart full of love and a bag full of kisses." I am a romantic sort. It seems I should have brought something fancy to wear.

One year you can bring them bubble gum. The next they have grown into teen-age harpies. Nothing less than cashmere sweaters will do.

A 10-cent comic book still pacifies our small boy, thank goodness.

I can't afford to go anywhere. It costs too much to come home.

☆ ☆ ☆

A good many things have piled up since I left a mere three weeks ago.

The bathtub is leaking down through the plaster. It droppeth as the gentle rain from heaven — upon the afternoon bridge players. The plumber cannot find this leak. The merry fellow suggests taking the house down and putting it back together again.

The gay tent with the Roy Rogers print has fallen among the poison oak. Did our own moppet cowboy do it? He did not! "It was Donna and Carrie. *They* pulled it down."

I gather that our boy stood by, pleading with them in a gentlemanly fashion to desist. He went around propping it up. He did his best. He was overwhelmed by the two young ladies who share his good fortune and his bad. (His fortunes have been terrible lately — a female around a tent is like same about a house; always moving the furniture.)

Consequently the tent fell down. It is scattered around the hillside. The scene looks somewhat as Little Big Horn must have appeared that day in 1876 after Custer had learned his military lesson: "Never divide your forces in the face of a superior enemy."

☆ ☆ ☆

"What did you bring me?" she said.

I do not divide my forces. I divide my belongings. "I did not bring you a cashmere sweater, daughter. But you can borrow one of my white shirts to wear sloppy-like. With the tail hanging out over your Bermudas."

For my son: "I have brought you a gorgeous comic book. It shows how to fight dragons." (It is a plugger comic book for a Russian movie. Sent to me by a pal press agent for the show business world. It is for free. Thus we capitalists save money.)

☆ ☆ ☆

There are stacks of bills. The staid utility bills that show I am a man of settled habits. (Also that modern comforts have me by the throat.)

The restaurant and theater bills. (They show I am a gay blade.)

The bank loans are due. (I am a supporter of free enterprise.)

The butcher, the baker. The garageman and the electrician — "How in the world did we blow that many fuses?"

Father is back at the old stand again. Relax. END

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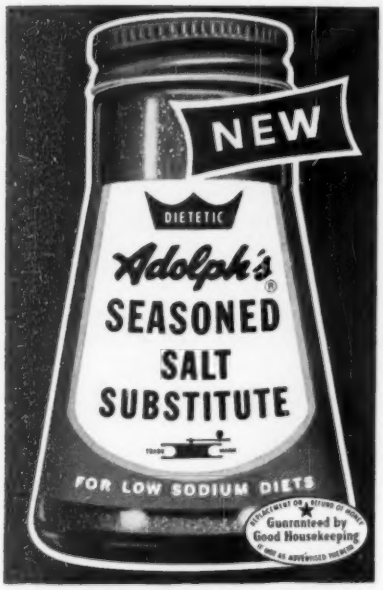
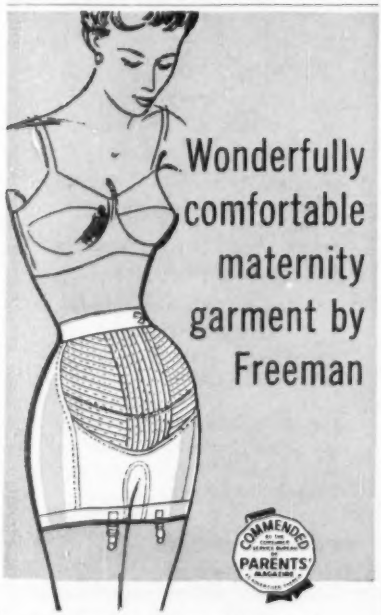


SALT-FREE DIET?

Adolph's New Seasoned Salt Substitute is an exciting blend of ingredients including pure spices, herbs, and mono-potassium glutamate. Gives foods a new flavor lift—without the sodium.

Use Adolph's New Seasoned Salt Substitute as you would *seasoned* salt. Use Adolph's regular Salt Substitute as you would salt. Both are available in food stores in the United States and Canada.



Fashionable design with natural rubber yarn provides gentle, firm support. Freeman's pre-shaped contour front gives uplift not achieved with ordinary girdles. It grows as you grow. Soft, lightweight and cool. Panty, girdle and brief styles.

Freeman Dept. 255 Sturgis, Michigan

Let's Talk About Food . . . *what you can do to assure your family's nutritional pleasure and profit.*

Edited by PHILIP L. WHITE, Sc.D.

•

I have seen bread labels with the statement: "Calcium propionate added to prevent spoilage." The label on the brand of tomato juice I buy states that monosodium glutamate has been added as a preservative. What are these chemicals? Are they harmful?

Monosodium glutamate, to my knowledge, is not used as a preservative. It is used to enhance the flavor of various foods—vegetables, soups, meat, poultry, fish products, specialty meats, relishes, and salad dressings. Glutamate is a form of an amino acid that is utilized by the body and is not harmful, even in quite large amounts.

The baking industry employs calcium propionate to prevent mold spoilage. Even though the baking process destroys the spores of molds that may be present, baked goods are exposed to spores present in the air and on bakery equipment. Calcium propionate inhibits the growth of mold and bacteria that would eventually render the bread inedible. Propionate, like glutamate, is metabolized by the body and is completely harmless. The body is quite capable of taking care of the calcium propionate added to baked goods.

•

Is the nutritional value of milk reduced by heating it to lukewarm before drinking? I cannot drink cold milk so I always heat it first.

So long as the milk isn't scalded during the warming process, there will be no loss of nutritive value. Place the glass of milk in a pan of warm water and stir occasionally.

•

The advertisements for foods, vitamins, and formula diets use strange terminology when describing nutrient content. What do they mean by "recommended daily dietary requirements," "minimum daily requirements", and "recommended dietary allowances"?

There are two fundamental standards used in reporting human needs for nutrients. They are: minimum daily requirements (M.D.R.) and recommended dietary allowances. There is no such standard as the "recommended daily dietary requirements." The minimum daily requirements were discussed on page 16 of the August 1960 issue of TODAY'S HEALTH. The M.D.R. is the amount of the vitamin or mineral needed to prevent symptoms of deficiency and to provide a small margin of safety. They were developed for use on special dietary foods.

The recommended dietary allowances are the levels of nutrients recommended as desirable goals in *(Continued on page 9)*

Doctor White is Secretary of the Council on Foods and Nutrition of the American Medical Association. The letters reprinted in this column are representative of the numerous inquiries he receives and answers each month.

Today's Health News

by ALTON L. BLAKESLEE

Holiday From Health: Most Americans pay no attention to physical fitness between ages 18 to 30, but that's the very time to start "training" for health and long life, declares Dr. Paul Dudley White, Boston heart expert. They pay for this holiday from fitness the rest of their lives. It's never too late to start re-training, he says, but good health habits should be started in childhood. One good way is to encourage children to walk more.

Fountain of Youth: Claims that injections of procaine rejuvenate elderly folks and combat degenerative diseases just do not hold up under analysis, reports Dr. G. C. Chiu of Indianapolis. Prof. Anna Aslan of Bucharest, Rumania, initiated the treatment, calling the procaine "H3." Doctor Chiu says the reports of great benefits "are of only testimonial nature," and he cannot credit the local anesthetic with any curative effects of underlying diseases.

Away With Warts: Warts will "disappear" -- as everyone knows -- if you rub them with an old penny or a potato peel. There are other "cures," too, and the strange thing is they sometimes work. It seems logical that the warts go away because the person has acquired spontaneous immunity against the virus causing the warts, says Dr. E. Richard Harrell, University of Michigan dermatologist.

Prematurity and Cigarettes: In a Baltimore study of 2700 mothers, premature births occurred more frequently among those who smoked cigarettes than among the non-smokers. The rate of premature births -- meaning babies who weighed less than 5.5 pounds -- was nearly twice as high among the smokers. But this apparent association might just be a coincidence, investigators comment.

Worrying Away Hair: Excessive anxiety can bring on temporary loss of hair, but the occasions seem pretty rare, reports a Philadelphia dermatologist, Dr. Albert M. Kligman. He tells of five persons in whom the loss of more than a normal amount of hair appeared to be truly psychosomatic, "a direct result of excessive anxiety."

Brain Waves: Electrical brain waves now are found to be more alike in identical twins than in non-related persons. It is the first measurable evidence that electrical activity of the brain may be inherited. The finding was made by Stanley Levine of Massachusetts Institute of Technology, as part of a broad program aimed at learning the "language" of the nervous system, and what the brain waves mean for human behavior.

Electrical Anesthesia: A few patients have been anesthetized by electricity for surgery, and this technique for temporary sleep looks highly promising. The first patients were two women who had operations lasting 30 minutes, and each recovered consciousness quickly after the

(over)

current was turned off, report Drs. James D. Hardy and Leonard W. Fabian, and M. Don Turner, Ph.D., of the University of Mississippi Medical Center. More research is planned on more patients.

Exertion and Miscarriages: Contrary to general belief, physical activity or overexertion is not a chief cause of miscarriages, says Dr. Carl T. Javert of New York City. He polled obstetricians and gynecologists who had delivered or supervised 250,000 pregnant women. "It is the lack of physical and mental activity in our modern civilization, rather than overactivity per se, that is responsible for spontaneous abortion," he concludes.

Warning Signal: In every state of the union, viral hepatitis rose sharply in 1961, with cases running 128 percent above the first two months of 1960, the U.S. Public Health Service reports. Caused by a virus, hepatitis is a liver ailment which sometimes is fatal.

Heart Attack Susceptibility: It's not the executive, but the low-salaried man who appears most susceptible to heart attacks, a three-year study of 89,000 DuPont Company employees finds. In the highest salary group, the attack rate was two per 1000 per year, 2.4 in the second highest salary group, and rose to four per 1000 among the two lower-salaried groups. Among skilled, semi-skilled, and unskilled workers who generally were more active than the other groups, the rate was 2.9 per 1000.

Radiation Injury: Experiments with radioactive needles support the theory that the damaging effects of radiation occur mainly in the nucleus of a living cell, rather than in the surrounding cytoplasm. Dr. T. R. Munro of Cambridge, England, did the work with a tiny needle tipped with radioactive plutonium. Radiation is emitted only in the small area touched by the needle tip.

Stomach Position: Babies cry less, have much less diaper rash, and do not scratch themselves so often when they lie on their stomachs rather than their backs. Dr. H. G. Keitel and associates of Jefferson Medical College and Episcopal Hospital, Philadelphia, learned this in a study in which newborn infants were compared when lying in the two positions. Diaper rash was about one-third less frequent among infants placed on their stomachs, and crying was reduced by about half.

Cancer Inhibitor? A pill containing two female hormones -- progesterone and estrogen -- has shown remarkable success in preventing conception. During the birth control tests, it was noticed that women taking the hormone apparently had less incidence of cancer of the breast and uterus than normally expected. Gregory Pincus of the Worcester Foundation for Experimental Biology, Shrewsbury, Massachusetts, now is following up this clue in a full-scale study.

These news items, gathered for Today's Health by a veteran science reporter from sources where serious scientific work is being carried on, are reported as interesting new developments, and should be read as such. Obviously no "endorsement" by the American Medical Association is implied by the publication of news items. —Editor

Let's Talk About Food

(Continued from page 6)

nutrition for all normal, healthy persons. These were developed by the Food and Nutrition Board of the National Research Council and were discussed in the April 1961 issue of TODAY'S HEALTH (page 68).

What is the value of calcium to the nervous system?

Calcium is directly involved in the orderly transmission of nerve impulses. An impulse is like a message which the nerves deliver. Calcium functions in the nerve fibers' acceptance of an impulse, their transmission of the impulse, and their return to a receptive state ready for the next impulse.

If a nerve is isolated, bathed in a solution that is free of calcium, and then stimulated, the nerve will transmit repetitive and uncontrolled impulses. If calcium is added to the solution in large amounts, the nerve will become depressed and unable to transmit impulses.

To my knowledge, a calcium deficiency of sufficient severity to affect the health of the nervous system has never been recorded. Calcium is important for the normal functioning of nerves, but it does not follow that a person can have a "healthier" nervous system by increasing calcium intake, or an impaired system due to lack of calcium.

Occasionally you hear that acid foods should be avoided or that fruits and vegetables are acid foods and should be used in limited amounts. Is this true?

This is decidedly not true. There is no reason for the normal individual ever to avoid acid foods.

Most of the so-called "acid" foods are ultimately not acid but alkaline in their reactions in the body. Almost all fruits and vegetables are alkaline-producing foods. One cannot predict that a food will have an acid effect just because it tastes sour. Food faddists and other popular writers who warn about the supposedly harmful effects of "acid" foods don't seem to comprehend the chemistry of foods and their utilizations. END

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TAMPAX Incorporated, Palmer, Mass.

that's a good QUESTION

Edited by WILLIAM BOLTON, M.D.

Prominent Veins

When the veins on the back of your hand stand out, does this means the arteries are getting plugged with cholesterol? Is this a common thing at my age, 65?

Veins on the backs of the hands tend to become more prominent in most older persons. This is principally because of shrinkage of the surrounding tissues, as well as loss of the fat layer beneath the skin. The change is usually of no significance.

Blockage of arteries would not cause the veins to become bigger. Instead, the blood flow would be decreased and the veins probably would become less prominent.

If venous swelling is due to an obstruction in the veins themselves (usually at some point higher in the arm), a more important sign would be filling of all tissues with fluid that has escaped through the walls of the blood vessels. The general term for this form of swelling is edema.

Gout

Why is gout listed as a form of arthritis?

Perhaps more for convenience in classification than for any other reason, gout is frequently considered in general discussions of arthritis. There is at least anatomic justification for this since the most disturbing symptom in gout involves various joints.

Uric acid deposits in and about these joints produce pain, swelling, and restriction of movement. Such deposits will often be found in other areas, perhaps the most common being the upper edge of the external ear.

Gout is different from ordinary arthritis in that its exact cause is known to be an accumulation of uric acid in that body. Also, unlike other forms of arthritis, gout is now not difficult to control. Most gout patients do not require extensive dietary restrictions. The exact cause of other types of arthritis has not been identified and there is no specific curative remedy.

Caffeine Intake

Is it safe to drink decaffeinated coffee when one has been taken off regular coffee? How much can I drink a day?

So far as we know, there is *some* caffeine in the various products known as decaffeinated beverages, even though as much as 97 percent may have been removed. If you drink large quantities of such products, you could ultimately be exposed to appreciable amounts of caffeine.

How serious this might be is something that only your physician can decide. It would depend on the reason you were originally advised to stop drinking regular coffee, whether you have improved, or whether even small amounts of caffeine would be unwise. We suggest you talk this over with your doctor when you have your next checkup.

Migraine and the Brain

For several years I have had what I call "sick headaches," but my doctor tells me that these are migraine attacks. Does this present any future problem so far as brain damage or stroke are concerned?

Migraine attacks do not affect arteries within the brain, but only those on the skull. Migraine is believed to be due to stretching or widening of these arteries, perhaps as part of an allergic reaction. Even if similar changes *did* occur in the brain arteries, this would be the opposite of the narrowing and decreased circulation commonly be-

lieved responsible for senile brain changes. We know of no reports indicating that patients with migraine are prone to senile changes or stroke.

Ultraviolet Rays

What are the effects of ultraviolet and other types of the sun's rays on the skin? I have read that only a few minutes of exposure to the sun, if the rays are a certain type, may cause cancer. Is this true? What are those rays?

The effect of ultraviolet rays, from either the sun or a lamp, is to produce redness of the skin, with later tanning. If overexposure occurs, the reaction may resemble a burn, with swelling and even blistering. This is experienced by people who are careless about sunning themselves or who stay under an ultraviolet lamp too long.

These same rays have been mentioned as possible causes of cancer, but this is not likely to occur in the average person who is merely acquiring a tan. A single overexposure doesn't mean a thing. It takes long years of being outdoors, as in the case of a farmer, a sailor, or an athlete. We know of no rays of the sun that might cause cancer after an exposure of only a few minutes.

Leak in the Nose?

Every time I sneeze, a lot of watery material flows from my nose. Could this be spinal fluid? I have heard of people having a leak of this into the nose.

We cannot be absolutely certain without having an opportunity to study you, but unless you have had a severe head injury, there is not much chance that the material is spinal fluid. Release of watery material from the cells in the mucous lining of the nose is always observed as part of a sneeze.

The substance causing the sneeze did this by irritating those cells, and this is nature's way of attempting to remove it from the area. As the fluid secretion continues, the watery material soon appears at the nasal openings. Usually there is no continuation of this after one has blown the nose. If there is any question about the possible presence of spinal fluid, you should consult your family physician. END

FUN FOR BIRTHDAY CHILD

Here's new happy way of celebrating a birthday. It's simple and easy and delights all ages of youngsters.

Of course this birthday idea can be enjoyed by almost any age of youngster. The family can put on the celebration without any outside guests. But it's a wonderful fun-maker for a birthday party.

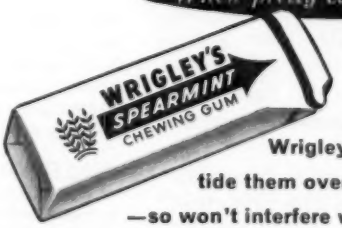
The royal birthday personage sits in a special decorated chair and wears a gold paper crown.

A birthday present, all wrapped up, is dangled over the monarch's head. "Guess what the surprise is inside." The king or queen has as many guesses as he or she wants.

For older children, answers are "yes" or "no." The younger the birthday child the more hints and helps you might give even to the point of practically telling what the surprise is. But the child must feel own victory in final "guess."

All the birthday gifts might be presented with the same routine. Each present is opened as soon as guessed.

When pretty close to mealtime



When youngsters get hungry near mealtime, delicious Wrigley's Spearmint Gum helps tide them over—never rich or filling —so won't interfere with meals.

You never outgrow your need for the nutrients in Milk

From infancy through old age there is a constant and daily need for the kind of high quality protein supplied by Milk and Milk foods.

Daily intake of protein is necessary for the bodily maintenance of adults as well as for the growth of the young. Within the body of an adult there occurs a steady breakdown and using up of tissue protein.

A balanced diet therefore should include protein from all four food groups.

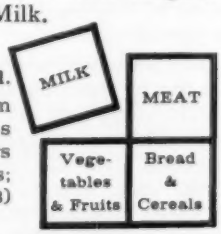
And because protein cannot be stored in the body as such, daily intake of Milk offers a dependable source of high quality protein. Milk protein is complete and can furnish the "essential amino acids" for healthy life processes and normal growth.

Besides serving as a daily source of high quality protein Milk and Milk foods are the principal source of dietary calcium.

While sunlight is the most economical source of vitamin D, milk fortified with vitamin D is our most economical and convenient food source of this vitamin.

Whenever a balanced diet is planned for any age group include Milk—because we never outgrow our need for the nutrients in Milk.

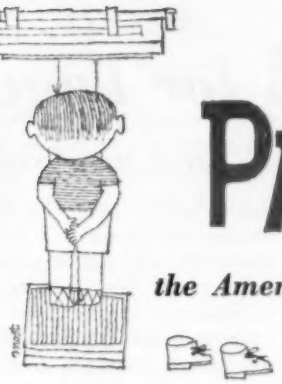
Milk makes it a square meal. Milk and other dairy foods form one of the 4 basic food groups you need every day. The others are (1) meats, fish, poultry, eggs; (2) fruits and vegetables and (3) breads and cereals.



AMERICAN DAIRY ASSOCIATION

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

GROWING PAINS



Edited in cooperation with the American Academy of Pediatrics

In our town of nearly 8000 people there has been an epidemic of German measles. Our two children, girls nine and 11 years old, were not restricted, but allowed to continue their activities as usual. Both girls caught the measles, but were not very sick. Now I am criticized by some of our neighbors for not taking more precautions.

It is the general consensus among physicians, especially those caring for infants and young children, that girls particularly should be allowed to acquire German measles (rubella) in childhood. If this disease occurs in an expectant mother during early pregnancy it may damage the unborn child severely. One attack of rubella as a benign disease of childhood is followed as a rule by durable immunity which should protect the mother throughout her child-bearing years.

Rubella acquired in the early weeks of pregnancy can damage the child, giving rise to eye defects such as cataract, to deafness, heart malformation, and brain damage. According to recent studies, 12 to 15 percent of mothers who have German measles in the first 12 weeks of pregnancy give birth to infants with congenital defects. If rubella occurs very early in pregnancy, within the first four to five weeks, the risk of damage to the child is much greater.

When rubella is acquired by the mother later on in her pregnancy, beyond the 12th week, the chances of giving birth to a defective child are very much less. Rubella in the last 12 weeks of pregnancy rarely causes damage to the developing infant.

I am the stepmother of a 14-year-old girl. She is excessively rude to me at times and questions my authority. How can I handle this problem?

All 14-year-old girls are rude at times to their own mothers. It is perfectly natural for your stepdaughter to be rude to you occasionally and to question your authority. It is difficult for any child to think of her stepmother as she would her own mother.

In the future, try not to impress your stepdaughter with your authority. Rather, take the attitude that you and she are working together for her welfare. Try to see her side of every problem, and be patient when she seems unreasonable. If you have a sympathetic attitude toward her, your relationship will improve and her revolt against your authority will diminish.

Is eating or sucking ice bad for my children's teeth or digestion? They crunch on the ice they get in soft drinks, and even take it out of the icebox at home.

Sometimes excessive eating of ice may be responsible for cramping pains and gas in the stomach, but there is no evidence that actual harm will occur if your children eat moderate amounts of ice. It is, however, unwise to let them eat it excessively, especially if they have just taken part in strenuous exercise.

The factor of uncleanliness must also be considered, for usually children's hands are far from clean when they transfer the ice to their mouth, take it out, and replace it repeatedly. Since sucking on ice is not necessary for getting enough fluid, and in all probability a cool drink will be as satisfying, the practice should be discouraged.

My three-year-old will not go to sleep unless I lie down with her. I give her toys, talk quietly, and reason with her for almost an hour and then I give up. What should I do?

Unless you have reason to believe that your child has developed an unreasonable fear of the dark, or of being alone, we suggest you stop lying down with her until she falls asleep. It is not good for her to build up the habit of relying on you. Check with your doctor and see if you are expecting her to get more sleep than she needs.

Readers are invited to mail their questions to Growing Pains, Today's Health, *535 N. Dearborn, Chicago 10, Ill.*

FIRST AID *for Lagging Lawns*

by SALLY MILLS SKIBITSKY

THERE'S probably nothing around your home that can give you more hours of pleasure than your garden —if it is designed to suit your way of life. "Who has the *time* to garden?" you shrug. Well, you do, if you can call part of your week ends your own. Set yourself one project a week end, and by fall, if you plan carefully, your garden will be pretty, comfortable, and easy to care for.

Just look over these suggestions, choose the ones you like, and sketch a plan for your yard. Remember, careful planning will save you hours of work. And unless your property is very large, you should be able to carry out almost any one of these garden face-lifting jobs in one week end.

First of all, consider paving part of your garden. A terrace, for example, is almost a must—add chairs and a portable barbecue (many sell for less than $10) and you have the focal spot for your summer entertaining. What's more, you'll have less lawn to mow!

One of the simplest of pavings for your patio (and paths) is a compacted mixture of soil and cement—if your soil is a loamy or a sandy one that adapts to such treatment.

To test soil adaptability, take a soil sample from the area you want to pave and mix with cement, one part cement to eight or nine parts soil. Work in water to dampen—not enough so there is excess water for you to squeeze out. Pack this mixture in a box and tamp as hard as you can. Keep damp for a few days, then dry out in the sun. If your soil-cement mixture remains firm, you can use this method of paving.

An even surer test: Soak your sample in water for a few hours, dry in the sun, and repeat procedure a few times. Still firm? Go ahead!

First mark the boundaries of your terrace or path. To save time, rent a rotary tiller, because you'll next need to pulverize the soil six inches deep and free it of rocks and sod. Figure on one sack (a cubic foot) of cement for each 20 to 25 feet. Rake the cement evenly over the prepared surface. Work it into the soil with the tiller, then rake surface even. Tamp with edge of a board until smooth. Sprinkle with a fine spray as long as water is soaked up and doesn't puddle.

Roll when dry (you can rent a roller, too), and keep rolling until smooth. Keep paving damp as long as it continues to absorb water. Edge the area with brick so soil-cement can't crumble at edge. Now you have a weatherproof paving, and if any small cracks appear, they're harmless.

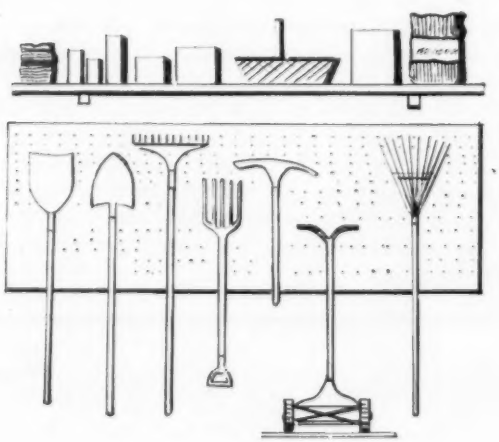
One of the most beautiful materials for a terrace is brick. Dark red common brick set in sand is easy to install and requires little later care (you may have to reset sections each spring if frost heaves your ground). If you plan a large terrace with an intricate herringbone or basket-weave pattern, do it in manageable sections, maybe a third or fourth of the area each week end.

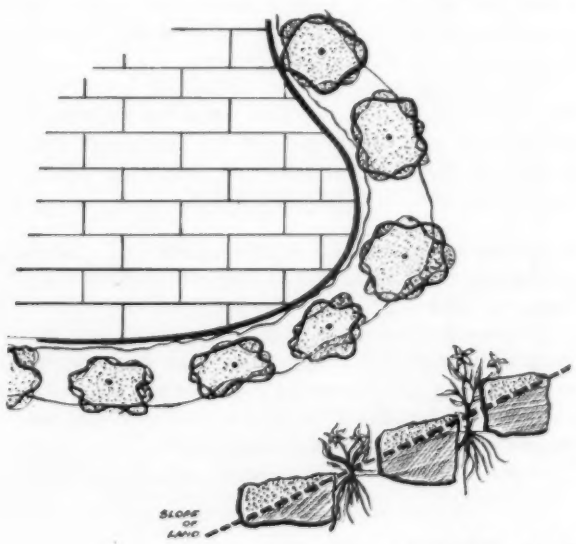
First, mark off the area where you will lay bricks. Edge it with 2x6

(*Continued on page 65*)

Left: Build a "toolshed" in your garage, using two boards and wide strip of pegboard. Top right: common red brick set in sand makes an easy-to-install terrace.

Bottom right: to make a rock garden, imbed stones of varying sizes to form a series of small ledges. Work from bottom up, leaving planting pockets between stones.





REVOLUTIONIST AT WORK

Antoine Laurent Lavoisier

IT IS truly amazing how much we take for granted. The world is full of convenient miracles. We use them without question and go on through our span of numbered years. And of all the taken-for-granted miracles, there is none more remarkable than the human body—a fantastically complex system of function, control, adjustment, and repair, involving organ and gland, muscle and bone; a body that has within it the heritage of its past and the seeds of its future. Mankind may be truly grateful that certain men did *not* take these life forces for granted. High on that list of special dedication is the name Antoine Laurent Lavoisier.

Lavoisier lived and worked in the latter part of the 18th century, when the people of neither France nor America took their liberty for granted. And he was no stranger to his fellow Frenchmen.

He is remembered as the man who explained to the world what John Milton called "the breath of life." He told us why we breathe; he discovered the gas we breathe, and he gave it its name, "oxygen." And he went on to outline the great facts of respiration.

Lavoisier demonstrated that when carbon (such as charcoal) is burned in air, oxygen is used up and carbon dioxide is formed to take its place. He states, in his paper entitled *Experiments on the Respiration of Animals:* "I have shown that oxygen may be wholly converted into carbon dioxide by an addition of powdered charcoal. It is possible, therefore, that respiration may possess the same property, and that oxygen, when taken into the lungs, is thrown out again as carbon dioxide. Does it not then follow that this pure species of air has the property of combining with the blood, and that this combination constitutes its red color?"

In short, he showed that the process of living involves burning, or oxidizing, food in the body. The energy from this combustion appears as the heat which keeps our bodies warm and as the work and movement which our muscles perform. Lavoisier had made an historic contribution to physiology.

But there was other history being made in France. The Bastille was stormed and the corrupt aristocracy overthrown. Lavoisier, himself an aristocrat, sympathized with the revolution and worked in its service. But he fell victim to the new corruption. He was denounced by a man who was a doctor and philosopher, but who history remembers more as a revolutionary leader—Jean Paul Marat.

At Lavoisier's suggestion, a wall had been erected at the gates of the city for the collection of tariff. Marat charged that the wall stopped the circulation of air in the city. In 1794, Lavoisier faced death in the form of a machine which bore the name of its inventor, Dr. Joseph Guillotin.

Lavoisier's contribution is of inestimable value. It was the basic step in the understanding of body metabolism. It led, eventually, to the modern idea of measuring food values in terms of a heat unit—the calorie—and to the determination of basal metabolic rates. The French mathematician, Lagrange, said of Lavoisier's death: "It took but a moment to cut off that head, though 100 years, perhaps, will be required to produce another like it."

Adapted from the AMA's public service radio program, "Medical Milestones."

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PROTECT HIM FROM DIAPER RASH WITH

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OINTMENT OR POWDER

You can make your baby happy and free from diaper rash and minor skin irritations by giving him **daily** routine skin care with Caldesene.

Caldesene is medicated, antifungal and antibacterial, protecting against diaper rash, prickly heat, and chafing . . . relieves itching, soreness, and burning.

Caldesene Powder soothes the skin by forming a thin protective coating that prevents moisture or other irritants from coming into contact with tender or affected areas. The coating does not interfere with normal tissue function.

Caldesene comes in two convenient forms: Caldesene Powder in easy-to-use 2 oz. shaker containers; and Caldesene Ointment (with a water-washable base) in handy 1½ oz. collapsible tubes.

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Speaking for 180,000 physician-members, exactly where we doctors stand on the

Medical Aid

HERE'S WHAT WE FAVOR:

The doctors of America believe that our aged citizens who need medical care should get it, whether or not they can afford to pay for it.

We favor a program of medical aid for the aged sensibly designed to *help those who need* help — that allows millions who can afford it to pay for their own medical care.

Such a program was enacted by Congress last year. It's the Kerr-Mills law which has the enthusiastic support of America's doctors. Specifically, the law provides for Federal grants-in-aid to the individual states, enabling them to provide health care for those among the elderly who need help. The benefits of this locally administered program also include the 2½-million Americans eligible for Old Age Assistance . . . and protect all other senior citizens who cannot meet the costs of a serious or long-lasting illness.

The Kerr-Mills law represents a common-sense approach to solving a problem that concerns us all. As doctors, we support it: our first consideration is the health and life of our patients. As Americans, we endorse it: helping those who need help is the obligation of all decent people.

HERE ARE JUST A FEW OF THE MANY REASONS WHY WE BELIEVE THIS NEW LAW DESERVES YOUR SUPPORT AS WELL AS OUR OWN:

- It preserves the quality of medical care — maintaining the patient's freedom of choice and the doctor's freedom to treat his patients in an individual way.
- Its benefits are unlimited, with medical aid authorized for any person over 65 who needs help.
- It is now being put into operation in 46 states, with the full support of the medical profession. And certainly each state is far more aware than the Federal Government of its own particular problems.
- It supplements the individual's right to participate in voluntary health insurance programs.
- It avoids waste of tax dollars: geared to need, it does not make Federal dependents of all the elderly able to meet their own health-care expenses.

AMERICAN MEDICAL ASSOCIATION

535 North Dearborn, Chicago 10, Illinois

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the AMA believes you deserve to know question of:

for the Aged

HERE'S WHAT WE REJECT:

As Americans — not simply as physicians — we are deeply concerned about the dangers of Socialized Medicine. And we are not crying "wolf" when we apply that term to the currently proposed legislation which would establish a COMPULSORY health-care program for everyone covered by Social Security (regardless of need). The Socialist Party itself calls this Socialized Medicine. And we believe them more expert on socialist definitions than those who describe the Social Security approach as "just a method of financing aid for the aged."

This COMPULSORY health-care program adds up to nothing more than Socialized Medicine — controlled by a bureau of the Federal Government . . . paid for by increased Social Security taxes, burdening both present and future generations. Confined at first to the aged, it would inevitably be expanded to cover all Americans.

Moreover, when the Federal Government enters the privacy of the examination room — controlling both standards of practice and choice of practitioner — the cost includes loss of freedom. Your doctor's freedom to treat you in an individual way. Your freedom to choose your own doctor. We must all recognize that when the physician is socialized, his patient is socialized as well.

HERE ARE MORE REASONS WHY WE BELIEVE SOCIALIZED MEDICINE FOR THE AGED SHOULD BE REJECTED:

- It would lower the quality of health care, with remote and impersonal bureaucratic control replacing the confidence and closeness of the doctor-patient relationship.
- It would lead to the decline, if not the end, of voluntary health insurance programs.
- The legislation now before Congress would lead to a further cut in take-home pay because of even greater increases in the Social Security tax — already scheduled to reach 9% of payroll in the years ahead.
- It would create vast new bureaucratic task forces, supervising medical care from Washington, D.C. . . . far-removed from individual needs.

Hugh H. Hussey, Jr., M.D.
Washington, D.C.

Cleon A. Nafe, M.D.
Indianapolis, Indiana

Rufus B. Robins, M.D.
Camden, Arkansas

Julian P. Price, M.D.
Chairman
Florence, South Carolina

IF YOU AGREE WITH US that a compulsory health-care program for any segment of our population would be bad for the nation, we urge you to write your Senators and Congressman. Urge them to reject Socialized Medicine in any form . . . to use our present program of medical care for the aged, administered locally, that *helps* those who need *help*.

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For over 25 years, *SLEEP SHADE*—with its unique design—has provided the complete darkness needed for sound sleep. Over 2 million have been sold because *SLEEP SHADE* provides absolute comfort and satisfaction. Price $1.50

For another sleep aid, try soft, re-usable *SLEEPWELL EAR STOPS* to banish noises. 25¢ a pair. Five pairs $1.00.

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She ought to know about

Genuine, Spring-action

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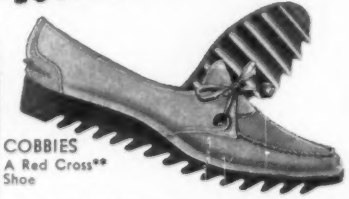

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Why suffer foot fatigue, aching feet caused by paper-thin soles? Isn't it time you tried famous spring-action RIPPLE® Sole that everyone's raving about? Tested and proven to help absorb shock, "energize" the step, this buoyant footing helps you feel fresher, longer! Millions "live" in them. Get yours... TODAY! Smart styles for the whole family at better shoe stores.

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Living Legends

A series of little known human interest stories about the world's best known people.

by Andrew Robin

THE PROFESSOR of literature and philosophy at the Jesuit school at Lille, France, was delighted when his wife presented him with a son. "We shall call him Charles André."

Charles André was always taller and skinnier than other children. Ungainly, he looked like an ostrich when he walked, his arms and legs protruding from clothes that never seemed long enough for him.

The youngsters of France grow up with politics just as the children of America grow up with baseball. As a teen-ager, the awkward young man was saddened at the political strife and bickering in his country. An honor student at school, he was thought to be dull at parties. But he had no time for frivolity. His logical mind could wither any opponent.

When war broke out in 1914, he elected to fight with the 33rd Infantry Regiment. A nickname, earned at school, stuck with him throughout the war; even he smiled when called "The Big Asparagus."

The gangly young lieutenant covered himself with glory. He was wounded but after a few days in the hospital slipped back to his regiment.

He charged into the thick of battle at Verdun. "He thrives on war with a passion," said his superior officer. He was wounded a second and third time, promoted to captain, and awarded France's top honor—the Croix de guerre.

When the war ended, he sat down to write his observations on the conduct of war, the problems of the old army, and the need for mechanization. The French generals laughed at his warnings. But others, especially in Germany, read his observations with great interest. When the Nazis re-armed their country, they followed his theories and created the famed tank units—the Panzer Divisions.

The second world war demonstrated the dramatic effectiveness of the Frenchman's ideas. After a brief struggle with Germany, France was overrun. Only one man was able to repulse the Germans during two major battles—the only battles France won before it was occupied—and this man was the "Asparagus." His most dramatic fight was a repulse of the German tank offensive at Laon. Who is this man? (*See answer below.*)

Charles de Gaulle

A Woman's Way

by CISSIE

"It's the ground-breaking ceremony for the new barbecue."

"Why, it's just what we needed! A silver can opener and a gold ice pick."

"There's nothing in the marriage vows about food for your lodge meeting!"

Baby's skin care begins with

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To keep your baby safe from diaper rash and other skin irritations, protect him from the action of harmful bacteria. For his daily bath, use Diaparene Tod'l®, the soapless, sudsing, anti-bacterial skin cleanser made especially for babies. Tod'l washes away the most common forms of rash-causing bacteria—faster and better than soap—leaves an anti-bacterial "shield" that protects against the growth of new bacteria for hours after use.

Diaparene Anti-bacterial Baby Powder, with its purified cornstarch base, soaks up irritating moisture, provides added protection against diaper rash, prickly heat, and chafing. For babies with dry skin, use Diaparene Anti-bacterial Baby Lotion. And to check irritating ammonia and odor in baby's diapers, use antiseptic Diaparene Diaper Rinse or choose a Diaparene franchised diaper service.

Recommended by Doctors

Sold at all drugstores

"Because I was nervous—a 'Grumpy Grandpa'—my doctor started me on Postum."

"My grandchildren made me realize how irritable and nervous I was. 'Gee, Grandpa's grumpy!' I heard them whispering. Was there something wrong with my nerves?

"The doctor didn't think so. He asked if I'd been sleeping well. I hadn't. Then he asked if I'd been drinking lots of coffee. I had. It seems many people can't take the caffein in coffee and I'm one of them. Change to Postum, the doctor advised. It's 100% caffein-free—can't make you nervous or keep you awake.

"Did my grandchildren notice the difference? They certainly did. When you sleep well, when you're not on edge, you have lots more patience. I'm sold on Postum —I like the way it makes me feel. You will too!"

Postum is 100% coffee-free

Another fine product of General Foods

PHOTO: FABIAN BACHRACH

Something to Think About

by Marvin A. Block, M.D., chairman, Committee on Alcoholism, American Medical Association

Teen-Age Drinking: Whose Responsibility?

The first in a series of guest editorials in which authorities in fields related to health, safety, and education will be invited to speak their minds frankly.

THE average young person in this country starts experimenting with drinking at about age 17. There are subtle references to the subject, tastes now and then of alcoholic beverages, and trial runs with a little beer, wine, or a sip of a cocktail. The olive from a parent's martini may already have become a ritual.

How shall we go about teaching a teen-ager about drinking—the good points, if there are any, and the dangers which are obvious to most of us? How do we impress upon a youth what drinking means, its risks, its effects, and its dangers?

Everyone does not react alike. Some people should *never* drink. About 10 percent of all alcoholics, for instance, have trouble early in their lives, dating from the first drink. In some people, alcohol invariably produces adverse effects or always results in excessive drinking. It is obvious that such people should not drink at all, at any time, for their own sakes and their families.

What of the others, however—those who do not have immediate adverse results? How are young people to learn that in alcohol we are dealing with a very powerful agent, which is used wisely and with control and propriety by some, but by others is used indiscriminately, without control and good judgment?

Alcohol can give a feeling of exhilaration, a sense of power, superiority, and grandiosity. But this power is unreal and elusive; it is the power of the alcohol, not of the drinker. When a person drinks only to get this power, there is danger.

It is imperative that young people learn to live realistically in a real world. When they drink to get a lift, to enjoy the envy of their friends, or to acquire a sense of grandeur, they are drinking to escape into unreality. The euphoria, the feeling of well-being, the sense of increased power, the lack of care and responsibility—all of which is much more pleasant than facing drab reality—can be very attractive. But it is of no value when preparing for future living.

The basic values must be taught. The realization that with every act there is an accompanying responsibility and the necessity for assuming this responsibility must be the basic factor if a person is to drink.

It is urgent that every youth learn about alcohol, know its physiological actions in the body, know how his body reacts to it. If it affects him adversely, he should learn to avoid it, especially when such adversity comes consistently with his drinking.

If he can control his drinking so that at no time he allows the alcohol to control him, then he may use it as many do, in appropriate social situations. If, however, he drinks for the effect it gives him, for the boost it gives his ego, for the courage he needs and without which he cannot face problems, then indeed alcohol is no longer a beverage, but a drug to give him something artificially which he does not himself possess.

These are the danger signs, and young people must be warned so they can recognize them.

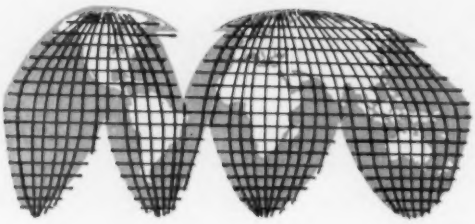
Education in the public schools, particularly in high schools, should give our children the true scientific facts about alcohol. These can be taught in many courses—general science, biology, physical education, health courses, as well as in the social sciences. The most important thing to be learned is that control is an absolute requirement. The slightest indication of loss of such control calls for complete abstinence.

Where drinking becomes a necessity in order to carry on, that individual should be detected early and taught how to face life's problems without depending upon a drug.

The respect for abstinence in others must also be learned by young people. Those who do not drink have a right to their abstinence without appearing inadequate. Refusal to drink by anyone must be considered a free choice, to be respected.

When such facts are generally taught, when the schools and the teachers in the schools understand the importance of the problem of alcoholism, and when the teaching is as seriously regarded for drinking as it is in many areas today regarding driving, then perhaps there will be sufficient knowledge disseminated so that alcoholism in future generations may be prevented. END

by *HAL HIGDON*



International Healers of Body and Soul

American medical students and physicians volunteer to serve in countries throughout the world where they help bring better physical and spiritual health.

THE ISLAND OF Mammituppu lies just off the northern coast of Panama, little more than an outcropping of sand and coral in the warm Caribbean Sea. It and a dozen or so other of the 350 San Blas Islands are inhabited by Cuna Indians, who work small farms hacked out of the jungle on the mainland by day and commute to their bug-free, snake-free island home at night.

For 400 years, Mammituppu had been off limits to white men, ever since gold-hungry Spanish *Conquistadores* roamed the area, slaughtering all who stepped in their paths. Missionaries were barred from Mammituppu; strangers couldn't stay overnight on the island; even the government of Panama had been refused permission to found a school.

Then in July 1958, Dr. Roland N. Icke of Gorgas Hospital in the Canal Zone, visited Mammituppu. He was refused permission to hold a clinic. But as Doctor Icke passed one of the thatched-roof houses, he noticed that the young child sitting in front of it had a cleft lip. He remembered a letter on his desk in the hospital. Dr. Ralph Blocksma, president of the Christian Medical Society and a plastic surgeon from Grand Rapids, Michigan, had written that he would be passing through the Canal Zone that fall on his way to Quito, Ecuador.

When Doctor Blocksma heard of the boy with the cleft lip, he agreed to rearrange his itinerary. Arriving in Panama, he traveled to neighboring Ailigandi Island by cayuco with Doctor Icke and Lonnie Ig-

From the mountain backlands of Northern Luzon, Igorot tribesmen bring their seriously ill to a mission clinic.

A physician makes his weekly rounds and treats patients at the Curran Memorial Lutheran Hospital, Liberia, Africa.

An Aymara Indian child who lives on a high plateau in Bolivia receives antibiotic cough syrup from Lindsay B. Smith—probably the first medical attention the child has ever received.

Dr. Robert A. Hingson, using a jet injector which he calls his "peace gun," is inoculating youngsters in Rangoon, Burma, with typhoid vaccine.

PHOTOS: CHRISTIAN MED. SOC.; SMITH, KLINE & FRENCH LABORATORIES; J.C.W. LAWSON

New York University medical student Peter Greenwald seems to have his hands full at a dispensary in Southern Iran.

The stethoscope has increasingly become an important tool in the kit of the Christian missionary.

Student Greenwald, right, assists Dr. John W. Coleman in an emergency case at a small village clinic in Iran.

lesias, a native convert who had convinced the boy's family to allow the cleft lip to be repaired. Within a few hours the operation was successfully completed. When the sutures were removed a week later, the entire population of Mammituppu marveled at the boy's new appearance. His father presented six eggs to the missionaries in appreciation of their work.

Today, active missionary work takes place on Mammituppu. Clinics are held regularly for the sick. Three boys have entered the mission school on Ailigandi. One of the islanders who understands Spanish recently purchased a Bible which he reads to the Mammituppu native council, translating into the Cuna language.

What occurred on Mammituppu is not an isolated case in the annals of medical missionary work. The stethoscope has increasingly become an important tool in the kit of the Christian missionary, second in importance only to the Bible. Last year more than 10 million patients received treatment by doctors and attendants in missionary hospitals and institutions

Medical student Jack H. Scaff, Jr., enters a hut of an Igorot family in the Philippines to examine an ill child.

Dr. Ralph W. Eichenberger and nurse Betty McCloud examine a Ticuna Indian mother and her children in Peru.

throughout the world. Many of these doctors belong to the Christian Medical Society, a service organization for Protestant mission groups.

"The Christian Medical Society," says J. Raymond Knighton, the organization's executive director, "is a group of Christian physicians and dentists who have associated together to make Christ known in medicine and through medicine. At last count we had more than 62 different denominations represented in our membership."

This society, so vital in the fight against an atheistic communist philosophy, doesn't consist entirely of medical missionaries. Active missionaries make up only about a fifth of its more than 2500 membership. Most of the members are practicing physicians scattered across the United States and Canada, who though themselves unable to work abroad are interested enough in mission work to support it both actively and financially. Others are students in medical school chapters who meet once or twice a week for both formal and informal discussions. "Every man a missionary" could well be the motto of the organization.

Recently the wife of one doctor explained why her husband had become a Christian Medical Society member: "Many of the people we met in medical school were either atheists or those who kept their religion sitting up on a shelf. We joined CMS to help balance our set of values."

Even though a large number of medical missionaries now working abroad are CMS members, the society does not sponsor mission groups, except on very short assignments. Mostly it cooperates with existing missionaries societies. Sometimes it provides drugs and equipment. Other times, CMS serves as a source of information for physicians cut off from the ordinary medical channels.

An important phase of recent CMS work has been the sponsorship of short-term missionaries, doctors who can go abroad for four to six weeks at a time at their own expense. "We recently queried some hospitals abroad," says Ray Knighton. "Seventy-five of them answered not only that they would like part-time assistance, but were actually desperate for it."

In recent years, several CMS members have filled short-term assignments abroad. Doctor Blocksma has been to Bangkok, Hong Kong, Puerto Rico, Ecuador, Japan, and Korea in addition to his brief stopover at Mammituppu. He describes part-time missionary work as tithing for Christ," giving up a portion of his time to the Church rather than merely money.

Dr. Charles Edman of San Jose, California, spent several weeks lecturing in Taegu, Korea, to the staff of the mission hospital there. Dr. Valdo Oleari of Wheaton, Illinois, an eye specialist, worked for five weeks in Nigeria. Dr. Hammell Shipps, a specialist in obstetrics and gynecology from Camden, New Jersey, worked a month in Korea and Formosa.

A leading ear surgeon from the South is leaving this summer on a world tour to do some teaching in his specialty. He hopes to bring one or two Christian national physicians back with him to study his technique for a year. Presently CMS is cooperating with the Ministry of Health in Ghana to establish a medical school in that country.

Even before John F. Kennedy made his much-heralded suggestion, the first wave of an American "Peace Corps" was at work in 17 countries on three continents. They went overseas through fellowship grants from Smith, Kline & French Laboratories.

Twenty-nine American medical school seniors, chosen by the Association of American Medical Colleges, received SK&F grants enabling them to learn as they contributed *(Continued on page 69)*

Dr. Paul T. Yoder takes the case history of a patient in the Deder Memorial Mission hospital, Ethiopia, Africa.

Two Korean physicians and Dr. Charles Edman look after a premature baby at Presbyterian Hospital in Taegu.

Planning Your

THE STORY of Robert Cushman Murphy is the story of a man who planned ahead. It is the story of a man who found himself in his 70's, in semi-retirement, "sitting pretty," as the saying goes. He had no financial worries. He was active, creative, and very much alive. He had managed his finances over the long pull of a career of many decades, and now in the crowning years of life he was, as some would put it, "on Easy Street."

How did he do it?

Doctor Murphy's chosen field was science—ornithology and conservation. He retired in 1955 as Lamont Curator of Birds for the American Museum of Natural History in New York. He was 68 years old. He was 73 when we went to talk with him about his first half-decade of retirement—or, in his case,

Own Security

by Howard Whitman

semi-retirement, for the man was still as busy as most scientists half his age.

"I probably seem terribly old-fashioned, but I believe in saving for what you want in life," Doctor Murphy remarked. Apologizing for the rhyme, he added, "I think there has been a drift away from thrift in this country." As a conservationist in the world of science, Doctor Murphy (his doctor's title stems from an honorary degree he was awarded by the University of San Marcos, Lima, Peru) put his talents to work against waste and wanton exploitation in the world of nature, and from this, perhaps, stemmed a parallel passion for conservation in the world of humans. As an individual, he saved throughout his lifetime, practiced the almost forgotten virtue of thrift, and "put by" for the future so that he and his wife, Grace, could live comfortably in a financial security of their own making after his retirement.

Doctor Murphy acknowledged that there are not too many of his species extant (though he had hoped that the talent for looking out for one's own financial future might be rekindled in this country with its increasing maturity). He recalled a recent trip to San Francisco, when he and Mrs. Murphy had visited a young couple who had just moved into a new home.

"Do you realize that this young couple didn't actually *own* a single major item in that house!" he protested. "Not the furniture, not the appliances, not even the car in the garage—and certainly not the house itself. I realize that perhaps this particular couple went to extremes in installment buying—but still, I thought it horrible." (*Turn page*)

Condensed from the forthcoming book, Brighter Later Life, *by Howard Whitman.*

The American penchant for mortgaging the future —instead of saving for the future—seemed appalling to him. His conservationist philosophy was badly jarred by the spector of the modern American decorating his life like a Christmas tree with bright and shining products bought on the installment plan, frequently owing three or four credit bureaus at the same time, and not giving a thought to the relentlessly compounding interest and the fact that in some cases he might end up paying twice the original cost of some shiny gadget (which might well be obsolete, worn-out, or broken, by time he finally got it paid for).

He recalled, "In my naivete, I went into a shop which sold agricultural implements not so long ago, and, seeing a price tag of $18 on a rotary lawn mower, I thought that was the real price! Knowing it must be worth around $150 at least, I questioned the manager and of course was told that $18 was the cost per month.

"This is just another indication of the casual attitude we have about money and debts. We don't think what the real cost is, or what the real value is—or whether we can afford a particular expenditure. We simply put down what money we have, go blithely home with our purchases—and figure that somehow we will 'pay later.'

"We go on from here to think that in our old age, the 'company' and the 'government' will support us, so why worry? Why save? Uncle Sam will do the job. 'I'm going to get Social Security and my pension —that'll probably do me fine—and so I'm not even going to think about my old age. It's too far off.' That's how so many people think these days."

Doctor Murphy, during his earlier years, knew that he had a pension awaiting him and that he, too, was covered by Social Security. But he recognized that these funds were meant to *assist* in the support of the individual and his dependents during his later years—not to take over the job completely. Now, looking backward from age 73, he felt that the early realization of this fact—that his pension and Social Security payments were *not* going to support him fully after he retired—was the key to his proper preparation for old age. During his highly productive middle years at the Museum, he rigorously put aside a portion of his weekly salary. He invested a small, but standard percentage of his earnings in conservative, long-term securities. Week after week, another small, but regular portion of his income was placed in a savings account at his bank.

Doctor Murphy was implementing his early realization that a pension check plus Social Security would not alone provide the financial comfort and independence he was seeking to build. He would need additional income and a good reliable backlog.

Perhaps it was Murphy's closeness to nature during his long scientific career which gave him a keener appreciation than most men of the "wholeness" of things. He lived and worked amid the incredible order of the natural world, saw the instincts of nature's creatures at work, and perhaps gained a special appreciation of the role of the individual man in his own natural struggle for self-preservation and survival.

This scientist selected as his specialty one of the most difficult branches of ornithology, the study of sea birds. Thus his expeditions took him not to the customary ornithological haunts of woodland, marsh, and mountain, but out upon the lonely vastnesses of the world's great oceans. In fact, it was largely due to his extensive research that "marine ornithology" has become a distinct branch of bird study.

FROM his investigations and reports, natural science gained the knowledge that sea birds were not just wandering vagrants—aimless, roving creatures —but were just as closely linked to their own special environment as the more familiar land birds. His research established that water temperatures, currents, availability of food supply, and a host of other environmental factors governed the lives and habitats of the sea birds and gave them, too, a well-ordered place in nature's realm.

Again, perhaps it was his intensely minute observation of the way these creatures of nature looked out for themselves which prompted Doctor Murphy to seek out the same quality in man, particularly himself.

He served on the staff of the American Museum of Natural History for nearly 40 years. During those years, his many expeditions took him to the tropical and sub-antarctic Atlantic, South Georgia Islands, the coasts and coastal islands of Peru and Ecuador, the western Mediterranean, the Pacific coast of Colombia, the Pearl Islands, New Zealand, islands

dotting the Pacific, Venezuela, and the islands of the Caribbean.

During several long stays in Peru, Doctor Murphy served as adviser to the Peruvian government on natural conservation, particularly reclamation of deposits of guano, a valuable fertilizer accumulating upon the beaches frequented by certain sea birds.

In Peru, Grace Murphy also became interested in conservation. Both husband and wife, from their growing intimacy with nature, developed a love for the proper husbanding of nature's bounties and a concomitant recoil against waste. They saw nature as a God-given abundance which could serve man with eternal generosity so long as he did not abuse the gift by looting it.

IT is not surprising, then, that the Murphys looked also to their own resources. What is "conservation" but a prudent eye toward the future? They kept a prudent eye on their own gradually accumulating resources, determined that they would not sabotage the future by overexploitation in the present. They were simply living out in their own private lives the same principles of conservation which, from the standpoint of science, they had found and proven valid in nature.

There were adventures galore for Doctor Murphy during his nearly four decades as a globe-sailing scientist for the Museum. On one expedition he spent, as he puts it, "nine hours in an open boat being dragged across the South Atlantic by a sperm whale." The thrilling and hazardous ordeal occurred on a cruise for sperm whale and sea-elephant oil aboard the New Bedford whaling brig, *Daisy*.

Cruising the South Atlantic with the winds, following the sky and sea trails of rare birds, Doctor Murphy added significantly on this sailing expedition to his growing collection of winged sea life for the Museum as well as conducting special studies on penguins on South Georgia Island and research into the life and ways of that ominous bird, the albatross, made famous in Samuel Taylor Coleridge's poem, "The Ancient Mariner."

Largely through Doctor Murphy's efforts, the Department of Birds at the Museum became world-renowned, with more than 800,000 specimens and a scientific ranking second to none. Prolific scientific writings flowed from Doctor Murphy's pen through the years, among them a definitive two-volume work, *Ocean Birds of South America* (which the *New Yorker* Magazine once pointed out has the same number of words as the King James version of the Bible). As a discoverer, Doctor Murphy had just about everything from a louse to a mountain named after him. Mount Murphy, on the coast of the Amundsen Sea, was named after him in 1956 by the Geology Commission of the International Geophysical Year. The louse which bears his name is the *Eurymetopus Murphi*, a species of feather louse which Doctor Murphy explained is "very partial to the albatross."

A bird, a fish, a spider, and a lizard also bear his name in the classifications of science. There is also somewhere in the frigid wastes of this globe's lonely vastness, a glacier named Grace—Doctor Murphy discovered it and named it for his wife.

When we visited him, Doctor Murphy appeared as anything but a has-been. Indeed, a great deal of life seemed to stretch vibrantly and adventurously in front of him, just as a great deal already stretched behind him. Tall, trim, and well-built with short gray hair and ice-blue eyes, he cut the figure of an active, creative man; not a man to whom retirement meant the end of the productive road and a swift downhill slide but rather merely a turning in that road for a continuing productive journey which had been planned and mapped in advance.

Of his retirement in 1955, Doctor Murphy said, "I knew it was coming and was pretty much prepared for it. And I actually looked forward to it, mainly because I had so many activities and outside projects that I wanted to devote some time to; and because the full-time job itself was becoming a bit of a strain.

"I think some men do their best work in their later years, but I also think that administrative jobs are not as a rule good ones for men over the age of 68 to hold. Why? Not because they have lost any intelligence or experience or knowledge or even drive. Just because they usually have become satisfied with the status quo. They're not interested in change. I experienced this—my successor is a man of 40, and I think it's great.

"Anyway, there are so many, many things a man can retire to. I think a man's in great shape if he quits while he still has good health. If he plans for it, he has a whole new and beautiful life to live."

DOCTOR Murphy commenced his retirement—by plunging into work. But it was a different kind of work. Now he was not tied to administrative responsibilities nor to a desk and office. He could select his work. He could do the things he had always wanted to do. (Which one of us does not have a long list of these?) But the important aspect of this newfound freedom was that there were no financial chains to limit or obliterate it.

Now the small, but regular amounts which Doctor Murphy had "put by" from his weekly salary over the years mounted into a substantial nest egg. Now the investments which he had built up, little by little, over the years when he preferred to conserve for the future rather than exploit in the present, had grown into a comfortable backlog. (*Continued on page 75*)

PHOTOS: GRAPHIC HOUSE, INC.; LONG ISLAND DAILY PRESS

Dr. Frank Netter, medical illustrator, works in his New York studio on painting for his book, The Digestive System.

Doctor at the Drawing Board

by ***ROBERT M. HENDRICKSON***

A PROMINENT pharmaceutical company once mailed to doctors a brochure featuring a drawing of the human heart. Across the drawing was printed a message extolling the firm's new drug for ailing hearts. The response was prompt and unexpected. Letters arrived from physicians hailing the heart illustration as one of the best they had ever seen and asking for additional copies — *without* the disfiguring advertising.

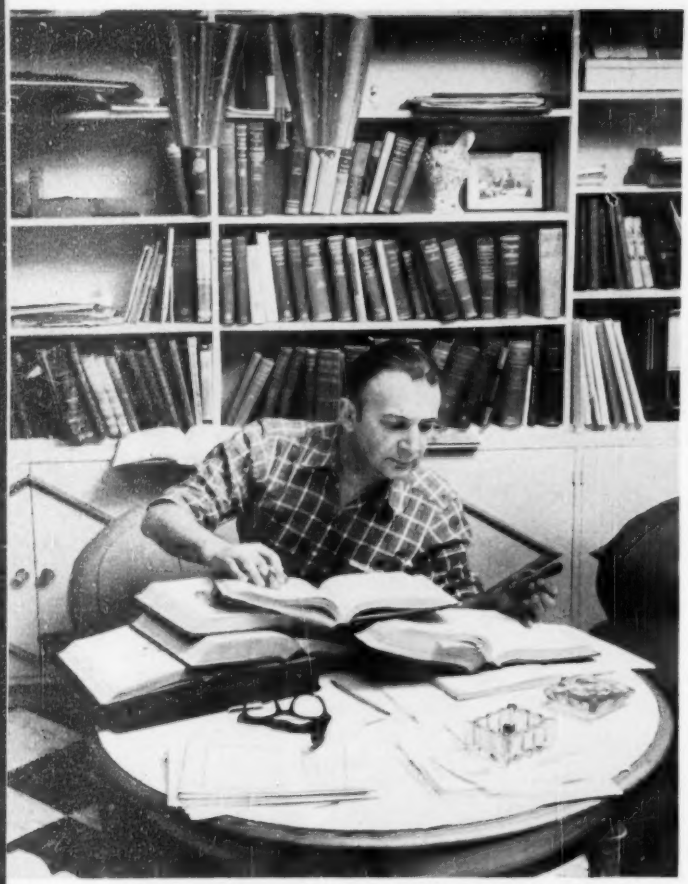
The artist who won the doctors' admiration was Frank Netter, M.D., and the incident is typical of his career as America's most successful medical illustrator. Though Doctor Netter has not treated a patient in 25 years, his drawings exert an influence on medicine that has been felt and praised by physicians throughout the world.

His studies of the human body are used by medical students in their professional training. Physicians find his illustrations helpful in showing patients just where they are sick and why. The U.S. Army called on him to revise its first aid manual during the second world war and his crisply-drawn, meticulously-detailed work became familiar to

A sound knowledge of the body's structure is a fundamental requirement for accurate medical illustration.

The artist relaxes with his wife, Vera; his youngest son, Jonathan; and unidentified member of the family.

Sketchbook in hand, Netter watches operation. He stresses importance for medical artist of on-the-spot observation.



A thorough search of pertinent medical literature is an essential step in the preparation for each painting.

thousands of GI's. But Netter is probably best-known for his monumental, still-in-progress pictorial atlas of the human body—a system-by-system depiction of the body's anatomy, physiology, and pathology.

It is a rare medical illustrator who combines in himself the scientific authority of a fully-trained physician and the graphic facility of an artist. Frank Netter is both physician and artist, which probably explains in part the eminent position he occupies in his profession.

In talking about his work, Doctor Netter emphasizes its basis in research and accurate clinical observation: "Painting the picture is the easiest part of the job. The hard part is getting the concept.

"The first step is acquiring information. No one can make a good medical drawing without knowing his subject. Make a thorough search of the scientific literature, especially the work of the last 20 to 25 years. Then go into the field. Visit clinics and operating rooms where treatment is done. Talk to specialists and, if necessary, call on the leading authority. While working on a drawing of the nerve supply to the stomach, I found the top man on the subject was in England. I paid him a visit."

A dark-haired man in his mid-50's, Doctor Netter speaks with energy and the conviction born of long experience. His manner is informal, like the bright-colored, open-necked sport shirts he prefers to work in.

After Netter has assembled his information (sometimes using a research assistant to do library work and translating), he forms a "mental image" of the picture he wants to get down on paper. This is a crucial stage. It is here that an important advantage of the artist over the photographer comes into play—the freedom to interpret.

Says Netter: "I'm not trying to be realistic. I want to record the earmarks of a condition—its *essence*, not just its existence. The camera picks up details that have nothing to do with the real problem. A photograph shows a particular condition at a particular time. By leaving out unnecessary details and emphasizing essential ones I can show how the condition occurs in many people at many times. The painting is universally true."

Netter's mental image approximates the mind of a clinician who has seen many cases of a disease and can bring his memory of them all to bear on the patient at hand. At this stage, Netter makes few notes and only an occasional sketch. His concentration has been described as "so intense that it works like a lock for other brain activities."

When his subject is firmly in mind, he transfers his mental image to paper. First he makes preliminary sketches, then a fuller pencil drawing, and finally, completes the painting in opaque water colors.

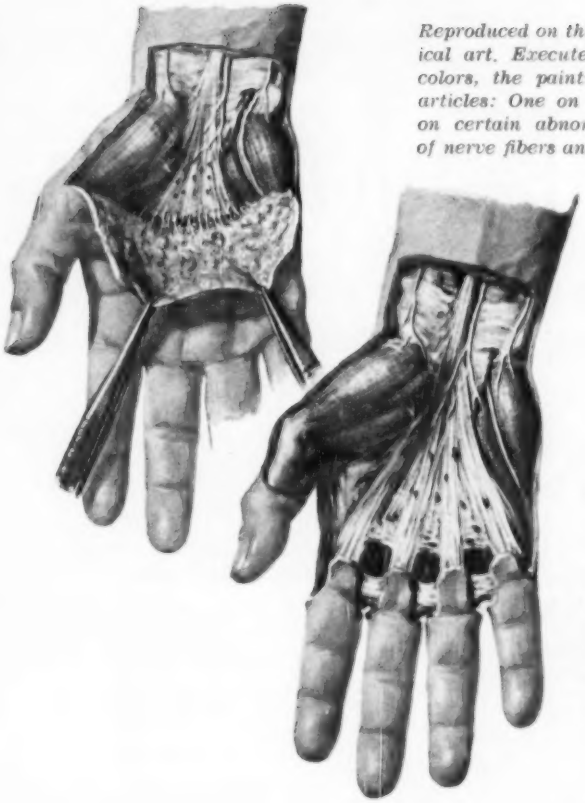
The last step is reviewing the finished work with a consultant, and incorporation of any changes or afterthoughts. Netter uses no painting assistants—from first sketches to final painting, the work is all his.

Frank Netter is a lifelong New Yorker. He was born there of Turkish-Lithuanian immigrants, grew up and attended school in the city, married a New York girl, and today works in the fourth-floor studio of his pink brick townhouse off Fifth Avenue.

He took his first step toward his present career by training in commercial art. He says: "I've been interested in art ever since I can remember. As a boy I used to draw things that appealed to me in my neighborhood. Later on, I studied at the National Academy of Design and the Art Students' League."

In the 1920's he was a practicing commercial artist. "In those days, photography wasn't used very much in advertising, radio was in its infancy, and, of course, there was no TV. I sold illustrations, did lettering, even worked as stage designer in summer theaters. I designed sets for (*Continued on page 84*)

Reproduced on this page are two examples of Dr. Netter's medical art. Executed on illustration board with opaque water colors, the paintings were used originally to illustrate two articles: One on the surgical anatomy of the hand; another on certain abnormal conditions resulting from compression of nerve fibers and blood vessels in the upper part of the body.



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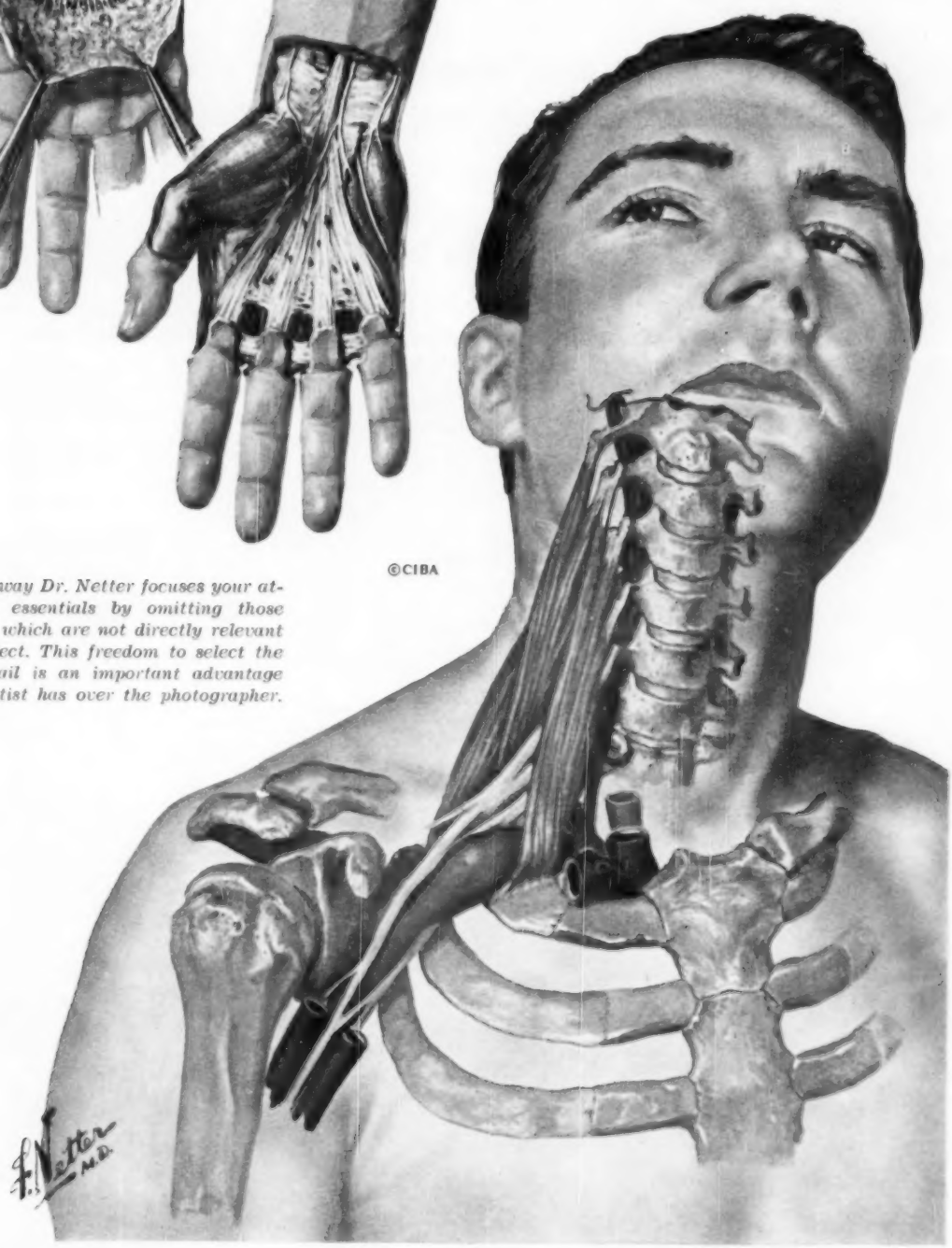
Notice the way Dr. Netter focuses your attention on essentials by omitting those body parts which are not directly relevant to the subject. This freedom to select the crucial detail is an important advantage that the artist has over the photographer.



Focus on Drugs

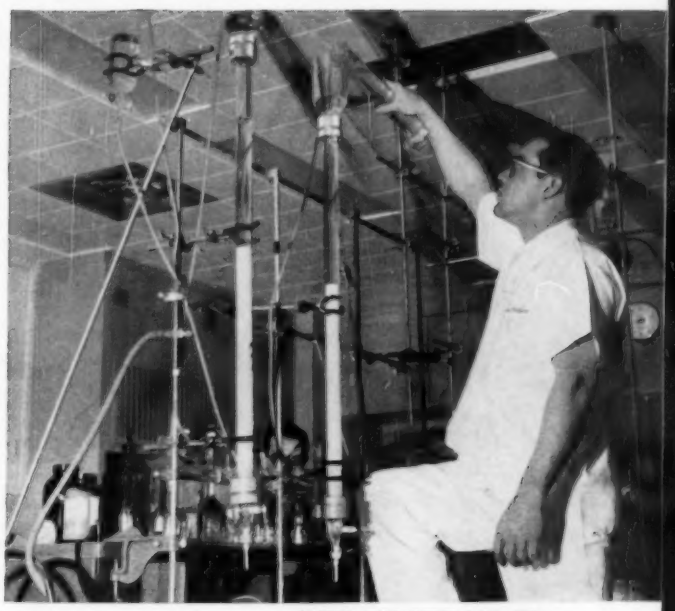
Coming: New and Better Antibiotics

Remarkable as they are, these wonder drugs still leave gaps in therapy. The search for new sources of antibiotics takes some novel and exotic directions—toadstools, pine trees, coral rocks, algae, and lichens.

by DONALD G. COOLEY

Screening of antibiotic broths and synthetics goes on endlessly. One center alone screens 30,000 substances a year.

Each "book" in this culture "library" is a vial containing dormant forms of microbial life, some 15 years old.



PHOTOS: CHAS. PFIZER & CO., INC.

Microbe families which produce magic juices we call antibiotics must be properly fed and tenderly cared for.

THIS one has been asleep for more than 15 years," said the man in the white laboratory jacket.

He held a slim glass tube no bigger than a pencil stub. Inside the sealed vial were tiny clumps and particles that looked like sweepings from a child's sandbox.

"It is one of the parent cultures of penicillin," the lab man said. "We freeze-dried it and sealed it in a vacuum years ago. It will stay dormant indefinitely, and we can wake the microbes up and put them back to work any time we want to."

The scientist was standing in a unique "library," surrounded by thousands of antibiotic Rip Van Winkles in glass sleeping-bags arranged on tier upon tier of shelves. A single door, like that of a meat market refrigerator, gives entrance to the large air-conditioned room which fills a corner in the basement of a Connecticut pharmaceutical research laboratory.

Similar antibiotic libraries are maintained in other research centers. This particular library holds nearly 20,000 "volumes" and several hundred new ones are added every year. Each contains some microbe family which can be revived and persuaded, by meticulous care and feeding, to produce magic juices known as antibiotics.

Antibiotic literally means "against life." Medically useful antibiotics are against only certain forms of life—against susceptible disease germs, but in favor of human life. Antibiotic *drugs* are quite choosy. They must disrupt disease germs without doing significant harm to the patient's own body cells. The world teems with antibiotic substances which have never become drugs and never will. A homely one is a common foodstuff you meet when you mix a salad or munch a hamburger with "fixin's."

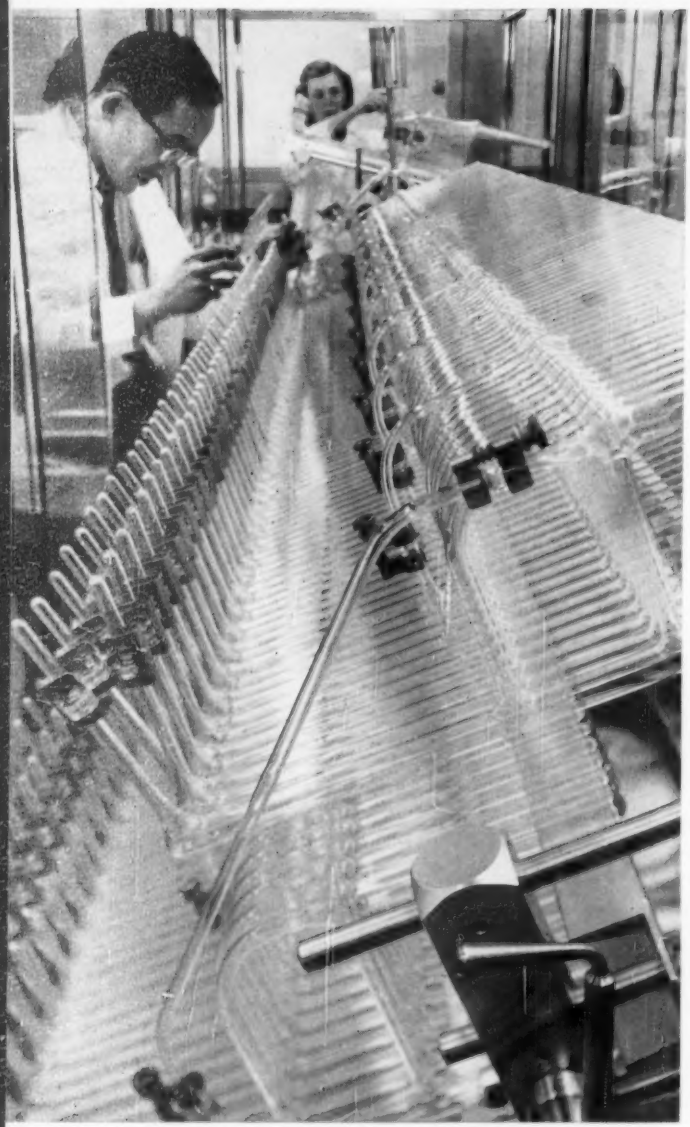
Nearly a century ago, Louis Pasteur discovered that this substance inhibits the bacteria which cause milk to sour, but does not affect other forms of bacteria. It acts like a selective antibiotic which attacks a specific germ family but is harmless to human beings. But it is not an antibiotic drug.

It is onion juice.

Very likely your physician has at some time given you an antibiotic to control an infection. Probably you recovered promptly and thought no more about it. Antibiotics are now so "old" and taken for granted that we, the patients, no longer feel the mystery and awe that surrounded these potent drugs when they were very young.

Yet antibiotics are objects of more extensive research today than ever before. What is there possibly left for scientists to learn about drugs that have been curing infections by the millions for many years? Surely, the last secrets must have been revealed long ago. Some people may suspect that continuous antibiotic research is just expensive boondoggling that satisfies the private curiosities of an army of researchers.

Actually, there is no better instance of the truth that discovery of a new drug is never the end of



The search is for new, unique, and effective molecules. This multi-tubular device, a counter current separator, is used to separate mixtures of medicinal compounds.

research, but only the beginning. To scientists, antibiotics hold a thousand mysteries, as many baffling problems, and tantalizing chemical secrets which may hold profound insights into the ways of health and disease.

Health is not a simple state of being. We have to stay healthy, from split second to split second, in thousands of ways all at once. Marvelous instruments which are beginning to "unscrew the inscrutable" now focus upon ever smaller and smaller worlds within ourselves—upon the incredibly intricate, ultramicroscopic parts of living cells and the incessant shuffle of molecules in and out of these prodigious chemical factories and powerhouses.

For instance, you may have wondered, "What happens to germs in my bloodstream when my doctor gives me penicillin?" Does the drug drown the germ, or strangle it, or starve it, or pick it apart? The "how" of penicillin's action began to obsess researchers from the day the drug came into use. Only recently have they solved the mystery. The next time the doctor gives your child penicillin for a strep infection, or you yourself are given the drug to overcome some dangerous germ family, you can assume, in the light of present evidence, that this is what happens:

The drug begins to do something very strange to the germ's "skin." Bacteria have cell walls which give them rigidity and shape. This structure is as essential to a germ's life as its shell is to a lobster (or a skeleton to a man). Penicillin stops some chemical step by which a growing germ builds or repairs its cell wall. In a sense, the germ's skin is peeled off, or made hopelessly flabby, with fatal results to the germ.

It takes time for penicillin to "skin a germ." The drug does not kill germs instantaneously on contact. It acts upon germs that are beginning to grow, to prevent their building healthy cell walls. The germ cannot grow up to raise a family. Gradually the germ invaders vanish from the bloodstream and body defenses complete the cure.

HOWEVER, if the dose is inadequate or is stopped too soon, germs may stage a vicious comeback and breed millions of offspring. Hence the hazard of dosing yourself with some leftover antibiotic capsule. If you need an antibiotic at all, you need to follow exactly the directions of your doctor who specifies the size and spacing of doses and how long you must stay on the drug.

Why doesn't penicillin make your own body cells collapse like empty grape skins? The drug molecule is exactly the right shape to fit into and disrupt some step in assembling molecules that make the cell walls of susceptible bacteria. But it doesn't fit that way at all into vital chemical processes of your own that are quite different. And so a drug which is deadly to vulnerable germs is relatively harmless to you. Some germs, too, use chemical processes that penicillin doesn't fit, and these germs are immune to the drug.

Other antibiotics work in different ways. The tetracyclines (broad-spectrum antibiotics which hit a very wide range of germs) seem to prevent iron, magnesium, and other elements from entering into enzymes a germ needs to make proteins essential to its life. Some antibiotics probably feed a germ a

stone instead of bread—a counterfeit molecule, very similar to one essential to bacterial life, but so completely useless that the deceived germ which accepts it is put out of business.

"All very interesting," you may think, "but what earthly use is such knowledge to doctor and patient? Drugs don't cure an infection any faster just because some scientist knows how a molecule tricks a germ."

True enough. Drugs are put to work to cure disease and ease suffering as soon as their effectiveness is proved. Do you know how so "simple" a drug as aspirin works? It eases pain and reduces fevers. But those are results. Scientists do not know precisely how aspirin works, except that its biochemical effects upon living tissues are enormously more intricate and far-flung than was ever dreamed of.

TOOLS and knowledge to pry out secrets of the body's living chemistry, the omnipresent interactions of molecules and atoms within us, are relatively new. Some of the knowledge thus gained is put to use quite promptly in treatment of human patients. But much of it is a piling-up of knowledge that will lead to better drugs and treatments of tomorrow's patients.

For instance, men in a number of research laboratories are busy today "skinning germs," so to speak. They make concentrations of pure cell wall materials and analyze them for "blueprints" useful in designing drugs. If you know enough about the molecules that make a germ's cell wall, you may be able to design an antagonistic molecule (a drug) which undoes the germ in some new and potent way.

This is one of many hopeful techniques by which drugs may be tailor-made, or created by deliberate design, to accomplish some specific purpose in the body. Success depends upon knowledge of the *structure* of unseeable molecules related to the *function* they serve in life's chemical processes.

At this very instant you are quietly making hundreds of "drugs"—insulin, digestive enzymes, neurohormones—chemical compounds which enable you to see and understand these words. Take insulin as an example. It enables you to use carbohydrate fuels for useful energy. And it does so because its molecule has precisely the right structure to activate biochemical steps in that conversion. No other molecule can make that claim! But other molecules of different structures have different functions, just as important.

Men of medicine are beginning to gain a little precise knowledge about the complex and obscure chemical processes that take place within the cells that make us. Antibiotics research is only a part, but an important part, of cross-fertilized studies by many kinds of scientists—physicists, chemists, pharmacologists, microbiologists, biophysicists, and others—who are building a new body of knowledge (beginning to be called "molecular biology") concerning dynamic processes that keep us alive and healthy.

Many hard-headed researchers are confident that such knowledge is the threshold of a new era in medicine which will yield drugs effective against degenerative and other diseases as yet unconquered, extend average life spans, and enable most people to maintain buoyant physical and mental vigor into advanced old age.

Researchers continuously improve "old" antibiotics and hunt new ones effective against rare diseases or tough germs, or which have fewer side effects, are longer-acting, or possess other valuable qualities. There is long-term probability that some day we may have antibiotics effective against cancers and virus diseases. Such research adds to our understanding of mysteries of growth, heredity, and nutrition, leads to improved methods of food production and preservation, and new knowledge about paths of metabolism (the sum of all life's physical and chemical processes) in our bodies.

In their exploration of atomic realms, chemists draw blackboard diagrams of molecules which resemble football plays, except that instead of 11 members of the coach's team there are scores and hundreds of players (in this case, atoms). A layman bewildered by such technicalities may well ask the question that a man who watched a demonstration of electro-magnetism asked of Michael Faraday: "What use is it?"

To which Faraday replied, "What use is a newborn baby?"

IT is of considerable use for chemists to unravel the complex structures of newborn antibiotic "babies," although the payoff may be long delayed. One hope is that molecules may be put together synthetically from simpler raw materials, to produce compounds cheaply and in large quantities. But only one widely prescribed antibiotic, chloramphenicol, is suitable for total synthesis on a commercial scale. During World War II, teams of British and American scientists tried desperately to synthesize penicillin, and gave up the task as hopeless.

Prodigious attempts to synthesize penicillin might seem to have been a total and very expensive failure. Except that—

In 1950, Dr. John C. Sheehan of the Massachusetts Institute of Technology achieved a synthetic penicillin. Unfortunately, it was medically useless. He continued to work, supported by Bristol Laboratories, a pharmaceuti- (*Continued on page 63*)

Whooping Cough:

Most Dangerous Enemy of Infants

by Louis W. Sauer, M.D.

Dr. Louis W. Sauer, pediatrician and immunologist of Coral Gables, Florida, is a foremost authority on whooping cough. He perfected methods of whooping cough prevention, combined whooping cough and diphtheria prevention, and combined whooping cough, diphtheria, and tetanus prevention. His books, Nursery Guide *and* From Infancy Through Childhood, *have gone through several editions.*

IN 1925, Dr. Ludvig Hektoen, a Chicago physician, wrote in *Hygeia*:

"Of all contagious diseases, whooping cough is the most likely to affect the youngest members of the family and herein lies its chief danger."

In 1960, Drs. Stephen Kaufman and Henry B. Bruyn, San Francisco physicians, writing in the *A.M.A. Journal of Diseases of Children*, described whooping cough as one of the most significant infectious infant diseases. They said whooping cough is "still a significant and dangerous disease, causing more deaths in the first year of life than measles, scarlet fever, diphtheria, and polio combined."

Though most children today have been immunized against this disease by the potent pertussis vaccine in early life, thousands of infants and frail young children are still contracting it, and many die of its complications.

Most of these needless sacrifices occur in unvaccinated children of low-income families who live in congested parts of larger cities, in infant orphanages, and migrant families in rural areas. During the winter months, bronchopneumonia is the most frequent secondary invader. In the summer, intestinal infections with diarrhea, dehydration, and convulsions take a high annual toll. For such unfortunate patients the mortality rate may exceed 20 percent.

Whooping cough is caused by a minute bacillus discovered in 1906 by Bordet and Gengou at the Brussels Pasteur Institute. They isolated it from the tenacious mucus coughed up from the deeper parts of the lungs of a tiny baby who had never been ill before. The germ is now called *Bordetella pertussis*, in honor of the man who first saw and grew it.

The infection usually spreads from a patient in the early stages of the disease to a susceptible child—one who has not been immunized nor rendered immune by having had the disease. The infectious material spreads into the air surrounding the patient. The germs are carried by minute, invisible droplets of saliva expelled during coughs. The inhaled culprits lodge in the finer bronchial tubes of the lungs. Here they rapidly multiply, but cause no signs or symptoms for at least a week or more. This is known as the incubation period.

Then symptoms of an ordinary cold set in. Secretions stream from nose and throat. A cough is heard, at first mostly at night. This is the "catarrhal" stage—nothing to make anyone suspicious, unless exposure to the disease is known to have occurred. This is the beginning of the most highly contagious period. Thousands of pertussis bacilli are spread into the surrounding air each day. Anyone who is not immune is exposed by coming close. The spells of coughing increase in frequency, duration, and severity. Eyes tear during prolonged coughs.

After another week, mucus from the deeper parts of the lungs is expectorated. Before long, gagging is followed by vomiting of recently eaten food. These episodes are repeated at least several times daily, usually for weeks.

Then, quite suddenly, after a prolonged spasm, a "whoop" is heard at the end of the attack. It is caused by the drawing-in of the breath through the swollen and constricted larynx. This long-expected whoop clinches the diagnosis. After this catching-of-the-breath has continued for weeks, much to the harassment of the household, the spells become shorter, less frequent, and milder. If a complication does not set in, the disease is on the wane. Should a secondary infection arise, the period of illness is more prolonged and more serious.

The patient should be quarantined as soon as the diagnosis is made. The local Department of Health must be notified. The patient must remain on the premises as long as the health authorities specify. The earlier the case is reported, the better for all concerned.

Neighbors' children should be kept away, even if they have been immunized. Their parents should be told so that their doctor might administer an extra booster dose to raise the child's protection if exposure has occurred in the preceding weeks.

THOSE who have not had the immunizing doses of vaccine will not be benefited by it now. The incubation period is too short and it takes months for immunity from the vaccine to develop. There is, however, a serum that is used for such exposed infants. It is also of value for infants and frail young children who are very ill with pertussis.

Medical treatment of whooping cough is rather discouraging. The injection of several doses of the hyperimmune serum mentioned above (prepared by the injection of pertussis vaccine into adult immune donors) is probably the most helpful measure. Sulfa and antibiotic drugs are of little help, except for the prevention or treatment of complications.

Cough medicines must be restricted, because too much sedation may cause retention of the mucus secretions. This in turn invites secondary viruses and pneumonia germs to get a foothold and cause complications.

Sensible nursing care that any mother can carry out in the home is very helpful. During the peak of the disease, infants and young children should spend most of the time in bed and well isolated against exposure to other germs, such as the common cold virus. The bedroom should be kept well ventilated at all times—day as well as night—but the air should not become too cold. The humidity should be kept fairly high. Irritating factors such as smoke of any kind, dust, and drafts provoke spasms of coughing.

On sunny, balmy days the patient should spend many hours out of doors, during which time the room should be well ventilated. Periodic examinations by the attending doctor should be encouraged, so that any complication can be detected early, and get the benefit of early medical care.

Immunization against whooping cough is now started in babies as young as three months, provided their general health and weight gain are satisfactory. A combined vaccine is used to protect simultaneously against diphtheria and tetanus as well as pertussis. Three injections are given, preferably at one-month intervals.

THE combined DTP vaccine not only is a great timesaver for parents, doctors, and nurses, it also reduces the number of shots, pain, and reactions to about one-third. Reactions—local as well as fevers—usually are no more frequent nor severe than they used to be after doses of the plain pertussis vaccine.

Booster doses—one about a year after the final dose of the primary (basic) series and another dose at age four—raise the immunity level against these three kinds of infection. When the first dose is administered before the third or fourth month of life, some doctors advise four doses in the original series because some infants at that early age do not have the full power to develop long-lasting immunity from three doses.

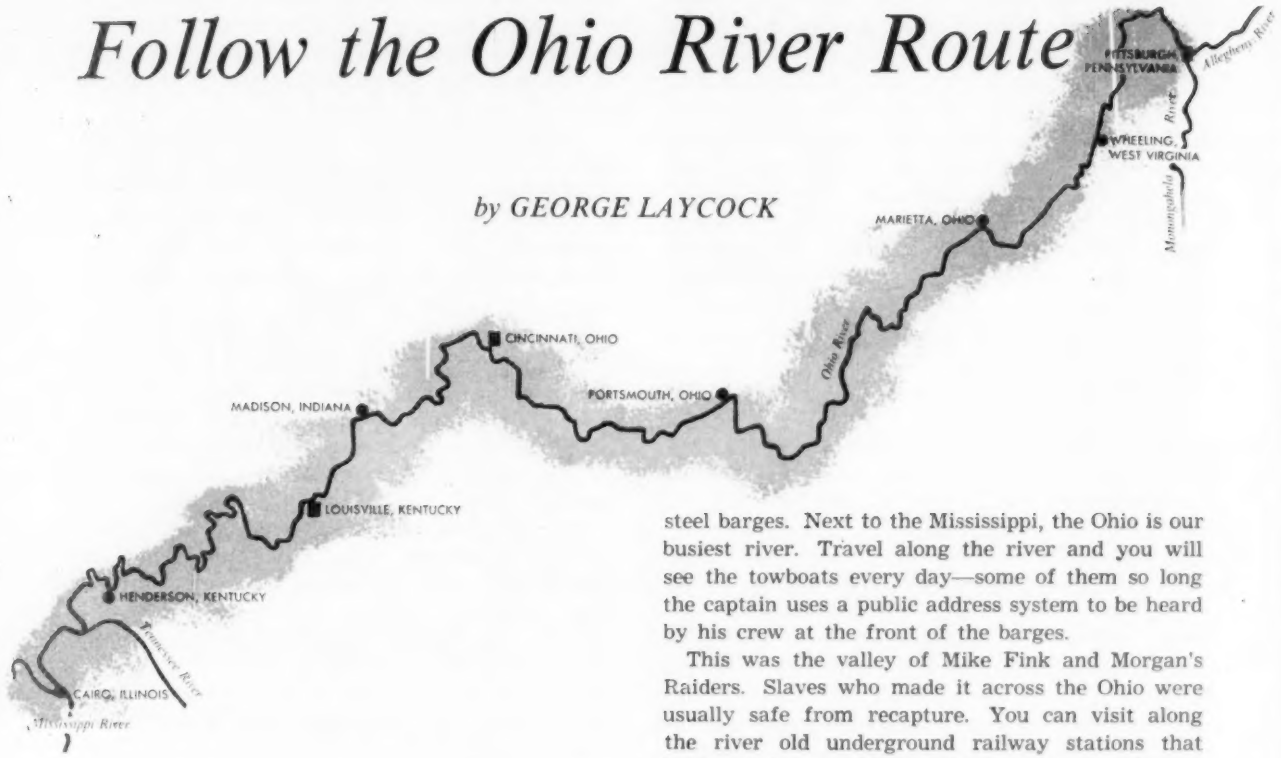
If the infant is not well on the day an injection is due, it is best to postpone the shot. We now know that an interval of several months does not decrease the immunity response. However, the longer it takes to complete the basic series, the longer protection is delayed. The child is not immune until at least a month after the final dose.

PREMATURE infants require adequate protection as early as possible. However, reactions are much more likely to be pronounced. For that reason, some doctors prefer to wait until the baby is older and stronger; others believe it best to start by the fifth month if progress has been excellent, but to administer fractional or divided doses. This means more trips to the doctor's office, because the entire total dosage must be injected before immunity can occur. Furthermore, this delays somewhat the completion of the shots.

To minimize reactions, keep the child as quiet as possible for a day after each injection. Extra attention—more fondling and caressing than usual—is most helpful. Offer the child water more frequently than usual and reduce the amount of his food for several meals. Avoid intense sunlight, excessive covers, and overheating in general. END

For Vacation Fun, Follow the Ohio River Route

by GEORGE LAYCOCK



Take a flatboat, river boat, or your own craft on the Ohio River, or drive alongside the winding river on one of many highways. You'll find scenes of current and historical interest.

FOR PIONEERS going west the Ohio was a river of adventure. It still is.

Follow the 981 miles of the Ohio and almost surely you will find more adventure than you can squeeze into a single vacation. From Pittsburgh to the Mississippi, good highways and inviting side roads open up this heartland of America.

Here is big country. Through its valley the Ohio flows past six states against a changing backdrop of mountains, rolling hills, old river towns, big cities, and open farmlands.

This river is steeped in the history of the nation. Here was the early highway to our first western frontier. Since Indian days she has carried people from the Alleghenies to the Mississippi, thence to New Orleans. Keelboats and flatboats worked the great Ohio. Then came packets, showboats, luxurious steam driven passenger boats, and now clean running diesel towboats pushing a quarter mile of steel barges. Next to the Mississippi, the Ohio is our busiest river. Travel along the river and you will see the towboats every day—some of them so long the captain uses a public address system to be heard by his crew at the front of the barges.

This was the valley of Mike Fink and Morgan's Raiders. Slaves who made it across the Ohio were usually safe from recapture. You can visit along the river old underground railway stations that harbored slaves and helped them escape. Best known is the Rankin House, now a small museum, on a hill above Ripley, Ohio.

No matter what your vacation tastes, a trip along the Ohio will open new discoveries for you.

Boating, fishing, camping, hiking — take your choice. You can explore forested wilderness areas or wander through quaint river towns.

The great cities along the river, Pittsburgh, Cincinnati, and Louisville, offer all manner of attractions. Fine restaurants, excellent hotels, plays, movies, zoos, parks, and golf courses invite the traveler. If you've wanted to see a big league baseball game, both Pittsburgh and Cincinnati offer the opportunity.

If ever you take the family boat on a vacation this is one trip for it. Launching sites in towns and cities make it simple to get into and out of the water. And once on the Ohio or its tributaries you're free to vary the highway travel with a day of sightseeing, fishing, or water skiing. If you've never "locked through" a navigation dam, here is your chance. There is no charge.

If you're not towing your own boat, you can still take the family on the river. There are river cruise boats you can ride. *(Continued on page 66)*

PHOTOS: GEORGE LAYCOCK

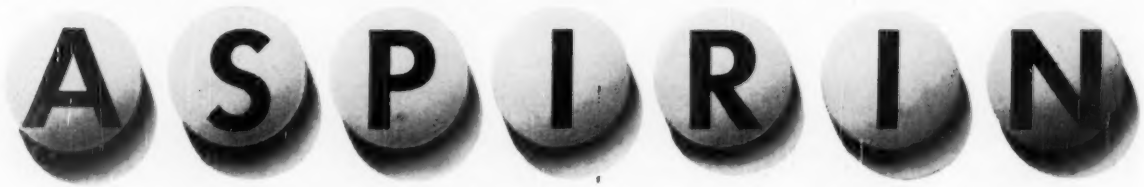
You'll have a chance to see towboats being "locked through" a navigation dam in Greenup, Ky., below Portsmouth.

PHOTOS: OHIO DEVELOPMENT AND PUBLICITY COMMISSION

The winding Ohio may be viewed in Eden Park, near downtown Cincinnati, proclaimed "the most beautiful inland city" by Winston Churchill.

The bridge on the right that crosses the Ohio River into Cincinnati is the oldest suspension bridge in the United States.

If you ever use



you'll want to read this!

by **THEODORE BERLAND**

IN THIS jet-propelled, atomic space age of ours, the 108-year-old humble white aspirin remains the most versatile drug of all. At the same time, it is one of the most advertised pills in the "hard sell" world of drug store medicines.

Aspirin is also the most widely used medicine in the world: in the United States alone in one year, 20 million pounds are made, over 16 billion tablets swallowed! In 1959 we bought almost $69 million of plain aspirin and $213 million of pain-killers that combine aspirin with other ingredients. That's a grand total of $282 million.

For this reason aspirin is frequently "gimmicked up" to sell for far more than it is worth. You should know about these sales tricks. Also, because it is the one drug you are most likely to use over and over again, you should know about its inherent, though infrequent, medical dangers and its more serious accidental dangers.

Aspirin is aspirin no matter what you pay for it. Yet, as one check showed, 100-tablet bottles of aspirin vary in price from seven cents to 69 cents for TV-advertised national brands.

While all aspirin tablets may be chemically identical, they can differ in the way they are made. Pills that are carelessly "pounded" together might disintegrate and dissolve more slowly in the stomach. This could mean two things. The longer it takes to dissolve, the longer the lag time between swallowing and relief. The longer aspirin stays in your stomach, the more likely it will bring on nausea or other stomach ills.

The head of a pharmaceutical firm which makes and packages aspirins for hospitals says, however, "There are few instances where a consumer can buy an aspirin that doesn't disintegrate readily. In any case, ask your pharmacist, as he investigates a company's products before he handles them."

In recent years plain aspirin has had screaming competition from other preparations. In fact, Louis S. Goodman, M.D., and Alfred Gilman, Ph.D., in a textbook on drugs, state, "There is probably no other field in which commercial drug exploitation is so extensive as in the manufacture and over-the-counter sale *of headache nostrums*."

One of the most popular of these are the so-called buffered aspirins which sell for almost twice as much as the most expensive plain aspirin.

Buffered aspirins are no more than plain aspirin plus a pinch or two of antacid salts. They are supposed to relieve the sour stomach or nausea that you can sometimes get when you take plain aspirin (which is an acid) on an empty stomach.

The fizzing headache cures which are vastly more expensive are essentially buffered aspirin, with some citric acid added to make bubbles!

Are these small pinches of antacids worth the bigger pinch on the pocketbook? In a 1958 editorial, the *New England Journal of Medicine* stated:

"It is exceedingly doubtful if there is any real merit over ordinary aspirin in these agents, but as a result of the vast advertising campaign many physicians as well as a majority of the public are convinced that they are indeed superior. Unquestionably, the medicine show technique has again demonstrated the power of its approach. . ."

One of the claims for buffered aspirin is that it "acts twice as fast as aspirin." Another is that it "won't upset your stomach as aspirin often does." Yet three important studies failed to support these claims.

At New York Medical College, Dr. Robert C. Batterman found that in 160 patients, aspirin acted just as fast as buffered aspirin and that the antacids "serve no useful purpose." Dr. G. A. Cronk of Syracuse University came to the same conclusions after studying buffered and plain aspirin in 367 patients.

Pharmacist Gerhard Levy and his assistant, Barbara Hayes, of the University of Buffalo, tested six brands of plain aspirin and two of the buffered type for: the time it took for each pill to disintegrate in the environment of the stomach; the time it took these particles to dissolve. They found that buffered aspirins dissolve in less time, but take much longer to disintegrate in the first place.

Another popular aspirin preparation for which you pay more is what former servicemen remember as APC, for aspirin-phenacetin-caffeine. Again, higher price accompanies louder shouts. One popular brand, which claims it's like a doctor's prescription, sells for about double the price of the most expensive plain aspirin.

It is true that doctors sometimes write prescriptions for preparations containing several ingredients. But APC is grossly unlike a prescription in that when it is bought over the counter for self-medication it is not chosen by a doctor for a specific patient with a specific illness. So don't be fooled.

Phenacetin (or acetophenetidin) parallels aspirin's pain-relieving powers, while the caffeine is designed to exert a mild central stimulating effect. Actually, APC is just as effective as aspirin. At the same time, phenacetin is more toxic than aspirin.

Acetanilid, a compound related to phenacetin, is used in place of aspirin in some headache remedies. It is *far* more toxic than aspirin. The American Medical Association's Department of Investigation has warned that "persons taking preparations containing acetanilid over a long period of time may suffer destruction of the red blood corpuscles with a blueness of the skin, heart weakness, and progressive mental and physical debility."

Acetanilid medicines usually carry warnings on the bottle. But since they are frequently dispensed at lunch counters, taverns, and soda fountains, these notes of caution are not always read.

Even though aspirin is considered a relatively safe drug, any drug powerful enough to help you has the potential to hurt you. Here are some do's and don'ts:

1. Most family doctors feel that their patients can safely take an aspirin or two for a headache, menstrual cramps, or minor aches. But when this dosage has to be repeated several times a day for several days, the doctor should be called. Aspirin will banish only mild pains. If it gives you no quick relief, it is possible that your illness is more serious than you realize.

(*Continued on page 72*)

Aspirin, the Painkiller, Can Also Be a Childkiller

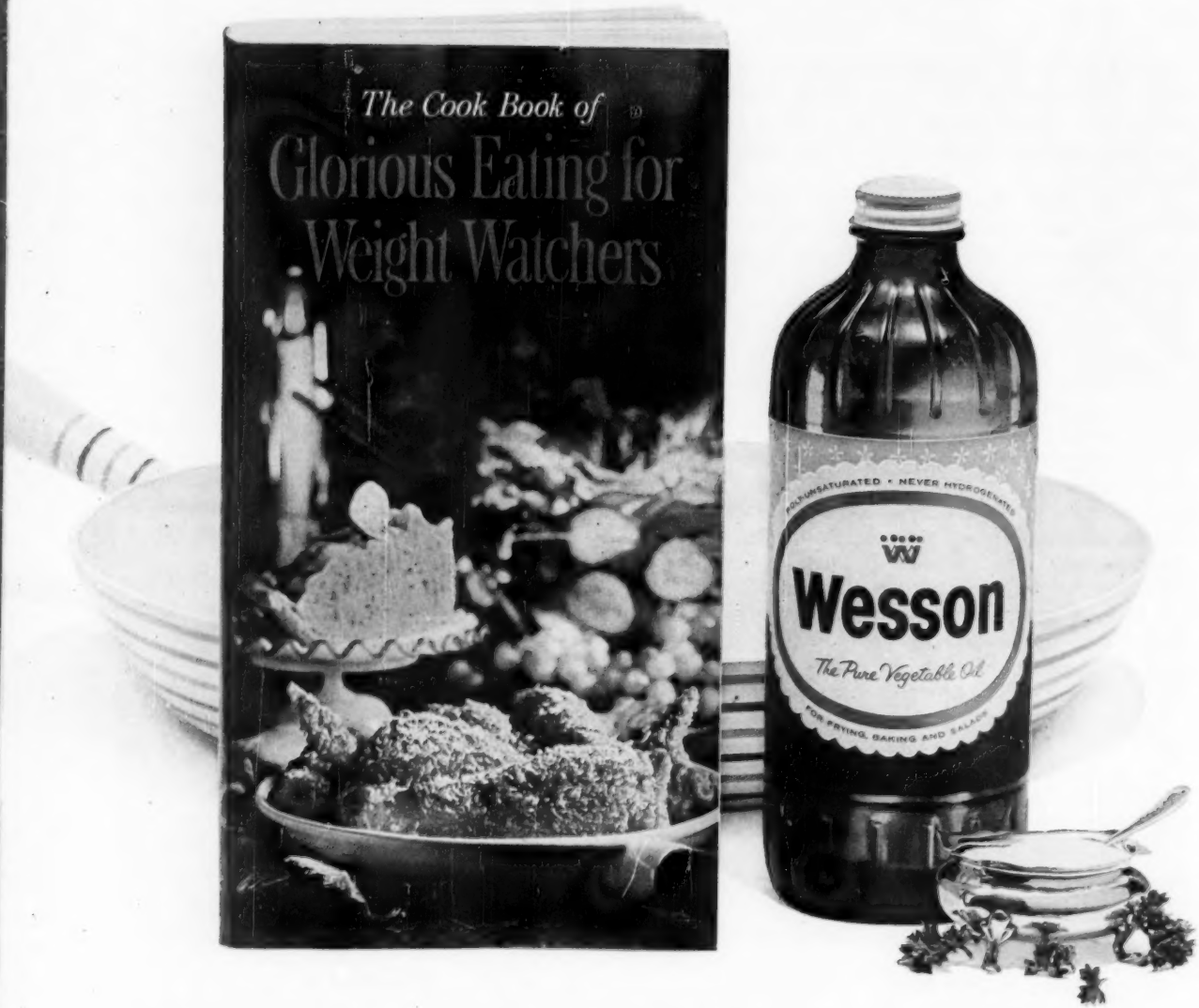
by John R. Frank, M.D.

ASPIRIN, the cheap and helpful drug, also can be a killer in your home. All physicians are aware of cases in which small children have been rushed to the hospital in a sometimes desperate effort to save their lives after they have swallowed some of the tablets. Because billions of aspirin tablets are manufactured and sold in the United States each year, parents should know something about the lethal properties of this valuable drug.

The deadly keystone in the chemical makeup of aspirin is a six-sided molecule of carbon and hydrogen atoms known as a benzene ring. The benzene ring is the chief and most active part of all the local anesthetics. It is in hundreds of drugs, including the drugs used as substitutes for narcotics. By itself, benzene is a light, clear, poisonous, volatile liquid with anesthetic qualities. One variation of the benzene ring is known as phenol, or carbolic acid, which will deaden the nerve endings in the skin.

Like a wild horse, benzene has to be tamed by harnessing it to other atoms and molecules. When two molecules of benzene are teamed by sulfur and nitrogen, we get a rather poisonous drug called phenothiazine. Phenothiazine is used to kill animal parasites in the gastrointestinal tracts of cattle and hogs. Phenothiazine also is a foundation drug in many of the so-called tranquilizers, because it helps calm and sedate the nerve cells.

When aspirin is exposed to moisture, even moisture in the air, it separates into two acids, acetic and salicylic. These acids ordinarily are neutralized by the salts and proteins of the body. A common complaint is, "aspirin causes a burning in my stomach." This, of course, is due to the corrosive action of the salicylic acid. To avoid the burning, one should take aspirin with milk. Or dissolve the tablet in water to which is added some soda (bicarbonate). Remember, too, a pain is only a symptom. The logical thing is to see your family doctor. Let him find and treat the cause of the pain.



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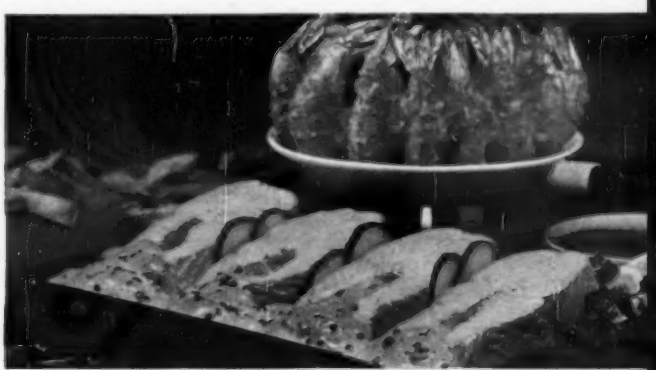

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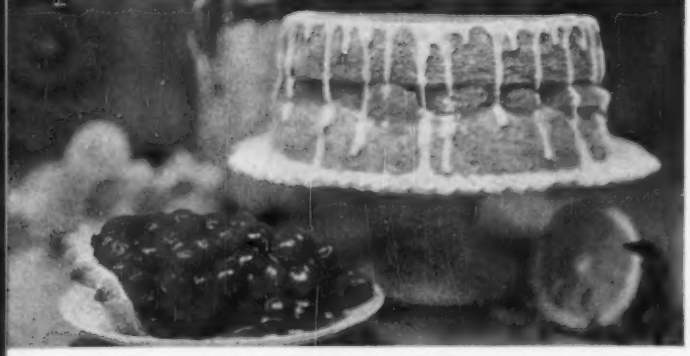

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by LILLIAN POMPIAN

Far-Reaching Fight Against Mental Retardation

Investigators on widely-scattered fronts are making exciting progress against the metabolic, genetic, and infectious disorders that cripple children's minds.

THREE-WEEK-OLD Susan, a blonde, fair-skinned baby of exceptional beauty, was brought into Children's Memorial Hospital in Chicago a few years ago and given a simple test. A single drop of a common chemical solution was placed on the infant's wet diaper. In a short time a telltale green spot appeared on the diaper—the signal that the baby suffered from phenylketonuria (PKU for short), a hereditary, brain-damaging disease which results in one of the severest grades of mental retardation.

Until recently, most PKU victims were doomed to live out their lives in institutions, many of them unable to walk, talk, dress, or feed themselves. Susan's brother, Tommy, a handsome five-year-old, had already been admitted to Dixon State Hospital, a hopeless imbecile. But for little Susie, life will be different. She was put on a special formula diet immediately. Now, at the age of five, there are no evidences of mental retardation.

"If every baby born in the United States from now on were routinely given this simple chemical test, several thousand could be saved from mental retardation in each generation," says Dr. David Yi-Yung Hsia, director of the Genetic Clinic at Children's Memorial Hospital and professor of pediatrics at Northwestern University Medical School. "But unless the condition is caught in the first weeks of life and controlled by diet, the child's brain development is impaired."

Too often diagnosis comes too late, because there are no early, obvious symptoms. Ironically, Tommy's tragedy opened the door to a (*Continued on page 60*)

FACTS AND FIGURES ABOUT MENTAL RETARDATION

- There are an estimated five million mentally retarded persons in the United States. This figure does not include "slow learners."
- More than 120,000 babies destined to be retarded are born each year in this country. This is nearly 30 babies in every 1000.
- An increase in the number of retarded persons is expected because of (1) the increase in population, (2) declining mortality rates and increased life span as a result of improved medical care, and (3) the survival of a greater number of damaged infants as a result of improved prenatal, obstetrical, and pediatric care.
- In 1959, about 150,000 retarded persons (three to four percent of the total) were in institutions. Estimated cost of lifetime care is $50,000 per person.
- Genetic factors known to cause retardation account for only a very small percentage of mentally deficient persons. Besides genetic factors, three main categories of environmental diseases and injuries are identified as causes: prenatal (e.g., infection of mother or nutritional deficiency before birth), perinatal (e.g., hemorrhage or inadequate oxygen supply during delivery), and postnatal (e.g., meningitis or lead poisoning after birth).
- Since the introduction of intelligence tests, retarded persons have been classified into three groupings: the moron (IQ of 70-75 down to 50-55), the imbecile (IQ of 50-55 down to 25-30), and the idiot (IQ below 25-30).
- More recently, other terms have been used to describe these three groups. Some call them "mildly, moderately, and severely retarded." Others prefer the terms, "marginally independent, semidependent, and totally dependent." Educators have introduced the terms "educable," corresponding to moron, and "trainable," corresponding to imbecile.

by GAYNOR MADDOX

How to Make A Perfect Cup of Coffee

THE MODERN coffee break is now approved by industrial psychologists. Even the housewives' Kaffeeklatsch may produce psychiatric benefits by providing a release for jet-age tensions.

Although Sweden, Denmark, and Finland top us in per capita coffee consumption, we consume 55 percent of the world supply. The average American drinks about 16 pounds a year. In fact, coffee almost ranks with apple pie and frankfurters as an American symbol.

Throughout Europe, coffee has this reputation. At a small, very sedate 18th-century inn in London, a sign over each dresser warns that a guest is not permitted to bring his horse into his room. Tea for breakfast? Definitely no. The thoughtful management, accommodates their American guests by sending up silver pots of strong, clear coffee along with typically English cold toast and bitter marmalade.

Experts estimate that over 200 billion cups of coffee are drunk daily throughout the civilized world. We certainly do our part. So do the Danes.

After the war when coffee was hard to come by in Denmark, a group of Latin American coffee growers sent a 100-pound sack as a gift to an old people's home in Denmark. Carrying a two-pound token package, the growers' representative called on the mayor, H. P. Sorensen. After presentation of the symbolic package, the mayor moved forward and said in a mock whisper: "Mrs. Sorensen loves good coffee, oh so very much. Do you think the old folks would miss just this little sack?"

Not only the old folks of Copenhagen but also Yankees like coffee from Latin America. In fact, 87 percent of what we use comes from our sister republics to the south.

In the New York offices of a Latin American coffee growers' association flourishes a 100-foot coffee tree. If you were to pick enough berries from this tree to make just one cup of strong coffee, it would take 50 berries. Two thousand berries are used for each pound of roasted coffee.

After you had picked your berries, expert coffee brewers in the same building could strip the pulp from the coffee, remove the beans, dry them quickly in an electric oven, roast, and then grind them. A few minutes more for brewing and the whole process from picking to drinking would take one hour.

But to process coffee commercially takes weeks, mostly with hand labor. No machine could distinguish ripe from unripe cherries on the tree. The beans are dried in the sun for days, then expertly

A scene familiar to Charles Dickens—the coffee vendor plying his trade in the streets of Victoria's London.

In foreground at left, two all-time coffee favorites: hot and iced coffee. At rear: a coffee and ice cream dessert, and a variation on iced coffee, Coffee Mist.

Styles have changed since this German drawing of the 1880's, but the Kaffeeklatsch still enlivens the day.

sorted and graded. The coffee we buy at the market is usually a combination of beans from many different Latin American countries which produce 80 percent of the world's exportable coffee.

But how do you make a good cup of coffee? There is no reason why your coffee should ever be anything but perfect. A uniformly good brew—full-bodied, clear as dark amber, and fragrant—is merely a matter of following directions.

Basic Rules

These apply to all types of coffee makers.

First, make certain that your utensil is sparkling clean. Scrub it after each use. Rinsing is not enough to remove the oils which coat the inside of your coffee maker each time you use it.

Be sure the coffee itself is fresh and the proper grind for your type of coffee maker.

Now for the brewing. Measure your coffee and water accurately. Allow one approved coffee measure (two level tablespoons) of fresh coffee to each three-quarters of a standard measuring cup of fresh cold water.

That will make enough for one serving of flavorsome coffee strong enough to please the average palate.

Water

Start with cold water. Don't use water drawn hot from the tap. It will give your coffee a flat taste. Turn on the cold water tap and let it run freely for a few seconds before you begin measuring it.

After you have measured the cold water, bring it to a full rolling boil before adding coffee. The water should boil, remember, but never the coffee.

Drip Coffee

First bring water to full rolling boil. Measure coffee carefully into the coffee basket. Then measure the exact amount of boiling water to allow three-quarters of a cup to each approved coffee measure of coffee (two level tablespoons of coffee). When the water has dripped through, remove the coffee basket and water container. Then stir the hot coffee thoroughly to insure a brew of even strength. That is very important.

Also important in making drip coffee: Never attempt to make a small amount of drip coffee in a large drip pot. The brew will be weak if you make less than two-thirds of the pot's capacity. Use only a two-cup or four-cup pot for small quantities.

Vacuum Coffee

Measure freshly-drawn cold water into the lower bowl. Place it over heat and, while it is reaching the boiling point, insert the filter in upper bowl. Then measure out the correct quantity of finely-ground coffee. When water boils, lower heat, and insert upper bowl. After most of the water has risen in upper bowl, stir the water and coffee briskly. After two or three minutes, remove coffee maker from heat. When all the coffee has returned to lower bowl, remove the upper section, and serve the coffee.

Never allow coffee filters to dry once they have been used. Keep in water in refrigerator. Rinse in clear water. Never use soap.

Percolator Coffee

For consistently good results with a percolator, first measure cold water accurately into pot, then place over heat. When water boils, remove pot from heat and measure proper amount of coffee into basket. Cover, return to heat, and allow to percolate *gently* for six to eight minutes.

Iced Coffee

There are three good methods: with coffee ice

cubes, pre-cooled, and the double-strength method.

1. Coffee Ice Cubes: Brew extra breakfast coffee and allow to cool. Then pour into refrigerator tray and freeze into ice cubes, turning temperature control to coldest point for rapid freezing. Iced coffee can then be made any time by pouring regular strength coffee over the cubes.

2. Pre-Cooled Iced Coffee: Make regular-strength coffee and cool in non-metallic container in refrigerator, not more than three hours. When coffee is chilled, pour over ice in tall glasses. Serve immediately.

3. Quick Double-Strength Coffee: Brew coffee double strength by using half the amount of water to the usual amount of coffee. Pour hot coffee over ice cubes in tall glass. The extra-strong coffee allows for dilution caused by the ice.

Instant coffee, made largely of coffees from Africa, is no longer a novelty—in fact today about one out of every five cups is made from instant coffee. It is best, in my opinion, when made in bulk in a large bowl, or when served as iced coffee using double the usual amount.

After-dinner coffee, or demitasse, or *café noir*, is always served in small cups along with sugar but never with cream. Use 2 level measuring tablespoons of dark-roast coffee to every 3 ounces of water.

Turkish coffee is sweet, frothy, and strong. Travelers in the Near and Middle East delight in tales of being served Turkish coffee in tiny china cups in which the little silver spoon stood straight up! To make 4 servings, use 1½ cups water, 4 tablespoons finely pulverized coffee, and 4 teaspoons sugar.

Caffè Espresso can be made in a drip pot, but a macchinetta is best. That's a two-cylinder device you can buy in almost any hardware store today. No matter how you make this strong Italian coffee, serve it in demitasse cups or wine glasses with a twist of lemon peel and sugar only. For 4 servings, use 8 level measuring tablespoons French or Italian-roast pulverized coffee and 1½ measuring cups water.

Here are two more variations on the coffee theme. Viennese Velvet is actually a dessert-beverage. For 6 servings, use 1 quart of vanilla ice cream and 5 cups (8 ounces) double-strength coffee, plus whipped cream. Place one scoop of ice cream in bottom of each tall glass. Pour hot coffee carefully over the ice cream until glass is about two-thirds full. Add a second scoop of ice cream and fill glasses with coffee. Garnish with whipped cream and a dash of nutmeg. Use parfait spoons for the first half of this dessert-beverage. But you drink the second half.

Coffee Mist is refreshing and simple: Pour cold, dark coffee into glasses filled with crushed ice.

Coffee is popular as an ingredient in cakes, puddings, and souffles. Some cooks prefer to use it in liquid form, others say they get a stronger coffee flavor by using instant coffee.

Jellied Coffee Souffle

1½ cups strong coffee
½ cup milk
1 envelope unflavored gelatin
¼ cup cold water
3 eggs, separated
2/3 cup sugar
¼ teaspoon salt
½ teaspoon vanilla
½ cup heavy whipped cream

Scald coffee and milk in top of double boiler. Sprinkle gelatin on cold water; let stand five minutes; dissolve in hot coffee mixture. Beat egg yolks in mixing bowl, adding 1 tablespoon sugar and the salt while beating. Add hot coffee mixture slowly to egg yolks. Return to double boiler; stir over hot, but *not boiling*, water, until mixture coats spoon. Cool. Chill until consistency of unbeaten egg white. Beat egg whites stiff; beat in remaining sugar and vanilla. Fold into gelatin mixture and beat until smooth. Fold in whipped cream. Turn into mold and chill until set. Unmold; garnish with whipped cream and cubes of plain coffee jelly. Serves 6.

Coffee Filling and Mocha Frosting

1 package vanilla pudding and pie filling
¼ cup sugar
1 tablespoon instant coffee
1½ cups milk
2 tablespoons butter
1 square unsweetened chocolate, melted

Combine pudding mix, sugar, coffee, and milk in saucepan. Add butter. Cook and stir over medium heat until mixture comes to a *full* boil. Remove from heat.

Remove ¾ cup coffee filling from saucepan and set aside. To make mocha frosting, add chocolate to remaining filling and blend well. Cool slightly.

Spread coffee filling between cake layers. Spread frosting on top and sides of cake.

Chocolate-Coffee Cake

1 package chocolate mint cake mix
1 cup butter or margarine
3 tablespoons cocoa powder
¾ cup chopped walnuts
1/3 cup instant coffee powder
1 pound confectioners' sugar, sifted
¼ cup cream or milk

Prepare and bake cake mix according to directions on package for 2 8-inch cake layers. Cool 10-15 minutes, then turn out on rack to cool. Split each layer in half lengthwise to form 4 layers.

Beat together in a mixing bowl the butter or margarine, cocoa powder, and coffee powder. Gradually add confectioners' sugar and cream or milk and beat until smooth and creamy. Sandwich the 4 cake layers together with some of the frosting in between. Spread remaining frosting on sides and top of cake. Press walnuts onto sides. Serves 8. END

"Until All Have Been Attended"

That's the credo of the Family Doctor of the Year, a small-town physician whose crowded but orderly life is one of ceaseless service to patients and community.

by JOHN D. PENNEKAMP and JOHN BRISKA

ON A COUNTRY ROAD near Marianna, Florida, late one evening as he drove a visitor home from dinner, Dr. James T. Cook, who had just learned that he'd been named 1960's Family Doctor of the Year, reflected on his feelings.

"It is certainly an honor," he remarked, "but I hope the boys at the Rotary and the rest of my friends won't think I campaigned for it. In fact, I don't really know why anyone should want to give me an award for having so much fun. That's what it all is, you know—fun."

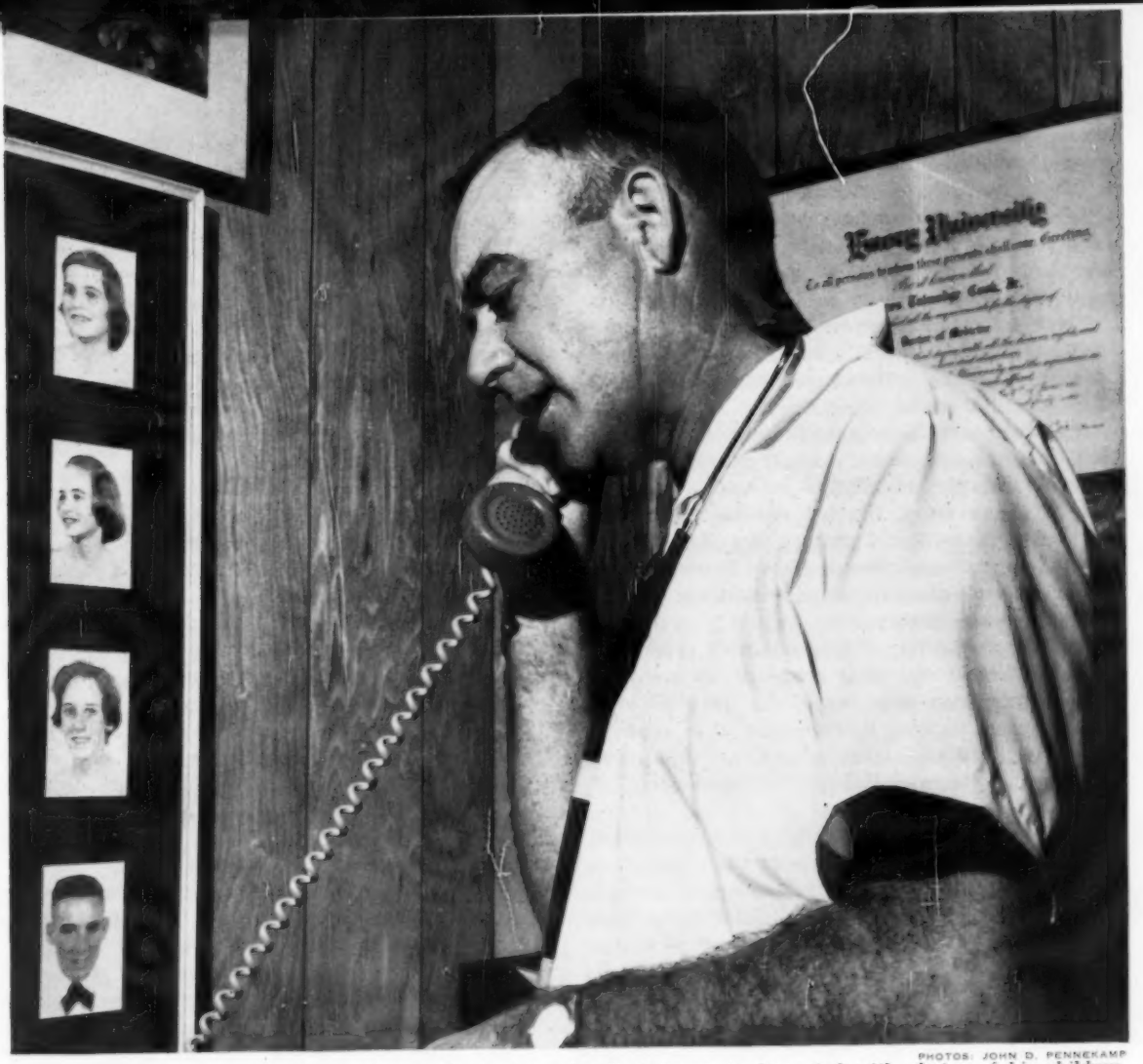
The American Medical Association, which has been giving this special recognition to family physicians since 1947, had some good reasons for honoring Jim Cook. They are summed up in a report to the AMA's House of Delegates entitled "1960 General Practitioner of the Year Award:"

"Doctor Cook is typical of the modern physician who combines his talents to bring the best of scientific medicine to the American people yet has unlimited energies to devote to the service of his community. . . He has entered into every facet of the social, business, and medical activities of his community. . . In spite of a very large general practice, and his participation in community activities, he has found time to be an active and contributing member of the medical community. . ."

For more than 15 years, Jim Cook has been practicing general medicine in Marianna, a city of 8500 about 15 miles south of the border of his native Georgia. He has worked 60 hours a week, treating an

Doctor Cook checks electrocardiogram with nurse, Mrs. Virginia Hamilton. His special interest in cardiology led him to organize area's only charity heart clinic.

Mrs. Billie Hamilton, lab technician and secretary, has Doctor Cook check her findings in blood count test. He works 60 hours per week, sees about 40 patients daily.



PHOTOS: JOHN D. PENNEKAMP

His office, a modern brick building only two blocks from the Cook home, is decorated with photos of his children.

Young patient is Sonny Miles, seven, son of Mrs. I. W. Miles of Bonifay, Florida. The town's eight physicians serve an agricultural area of 100,000 population.

Cook credits his uncle, druggist Lucian Watson, with inspiring much of his sense of civic duty. He helped Watson raise funds to bring junior college to Marianna.

average of 40 patients a day for everything from sprained ankles to heart conditions. Though the town is small, its eight physicians (all general practitioners) serve an area of 100,000 persons. The Marianna region is largely agricultural; peanut farming and cattle raising are the most important local industries.

The Family Doctor of the Year is slightly above medium height, is stockily built, has a dark complexion. At 44, he is the second youngest physician to receive this award.

His manner is forthright; he is slow to offend, but that doesn't prevent him from speaking his mind articulately. He admits he has "a bit of a temper" when vexed, but is quick to cool off and apologize. He holds no grudges. His voice has an almost heavy South Georgia-North Florida accent. On a speaker's platform, it is penetrating with an engaging drawl quality.

Even a partial list of Doctor Cook's community activities shows his wide scope of interests. He was the first male president of the Marianna PTA. Both he and his wife, Lillian, have been active in Boy Scout and Girl Scout affairs. An enthusiastic Rotarian, he was president of the local club in 1954-55.

He is president of the Civic Music Association, past president of the Sportsmen's Club (which he helped organize), a member of the board of stewards of the Methodist Church, and a director of the Marianna Country Club. He has also found time to help raise funds for Marianna's 550-student Chipola Junior College, named for the river which skirts the town.

An avid outdoorsman, he has served on the Advisory Council of the Florida Caverns State Park, and in 1959 was appointed by Governor Leroy Collins to the State Board of Parks and Historic Memorials. He is now secretary of the Board.

As an active and contributing member of the medical community, Doctor Cook has served on many committees of the Jackson-Calhoun County Medical Society and as president of the Society. He has been chief of medicine and chief of staff of the 75-bed Jackson Hospital in Marianna. He is a regular delegate to the Florida Medical Association, past vice president of that organization, and has worked on many of its committees.

His special interest in cardiology led him to organize a charity heart clinic, to which he devotes time each week. For years, this was the only such clinic in the 370 miles between Jacksonville and Pensacola.

Doctor Cook believes that professional men and women should interest themselves in public affairs and in better government. "Too many evade this responsibility by remaining within the shell of their professional obligations," he declares.

He was one of the organizers of the Florida Medical Committee for Better Government, and is now its president. "We don't try to influence anyone's vote," he says. "We want good candidates to run and we want to encourage the voter to inform himself so that his vote will be an intelligent one."

To Jim Cook, all these accomplishments are not unusual. "I don't work too hard," he says, insisting that he hasn't done any more than the other physicians in Marianna. Not participating in the town's civic life or contributing to its betterment would be as unnatural to him as not enjoying the hunting and fishing in the nearby woods and streams. His

Though his daily routine seems hectic, he thrives on long hours. After practicing in Marianna for over 15 years, he calls it "just about the most ideal location."

All the Cooks play musical instruments. Here, Carol, 12, plays for her mother (piano, organ) and father (violin). Jimmy plays bass horn; other girls, the piano.

community activities are so much a part of his life that he says he "does 'em in his off minutes."

Theoretically, Doctor Cook's "off minutes" are Thursday, Saturday, and Sunday afternoons. But in reality, his free time boils down to Thursday afternoons. Saturday afternoons are taken up with hospital visits, and Sundays are filled with church and civic activities and, again, hospital rounds.

The expression, "he's spread too thin"—often applied to active men—doesn't hold here. Doctor Cook seems to have time for everything, and when he undertakes a new venture his thoroughness inspires and challenges his associates. He has a tremendous capacity for organizing his activities so that his practice is never neglected. Yet he appears where he has promised to be—and on time—to attend to his many and varied public interests.

To Doctor Jim, Marianna is "just about the most ideal location you could have." Though he lived in Georgia till he finished high school, his summer vacations since he was "knee-high to a grasshopper" were spent in Marianna with his uncle, Lucian W. Watson, Sr., proprietor since 1902 of Watson's Drug Store on Lafayette Street.

Doctor Cook received his A.B. degree in 1937 and his M.D. degree in 1941 from Emory University in Atlanta. After interning for a year at Emory University Hospital, he joined the Army Medical Corps to serve overseas in World War II. For his duty as an assistant battalion surgeon, and later commanding officer of a collecting company, from Normandy through Germany, he received five battle stars, was awarded two bronze stars and the combat medical badge.

After the war, Doctor Cook returned to Marianna with Lillian, the Georgia girl he'd married before entering the service. "Uncle Lucian talked me into coming down to stay," he explains.

The druggist admits enticing Doctor Jim into settling permanently in Marianna, says merely: "We got him an office and put him to work."

Mrs. Cook couldn't have been happier with the choice. "It's awfully wonderful to be a family doctor," she says in a soft accent as Southern as her graciousness. "I only wish the young boys coming out of medical school could see the life a general practitioner lives in Marianna. It's an ideal community. I wouldn't trade it for anywhere else in the world."

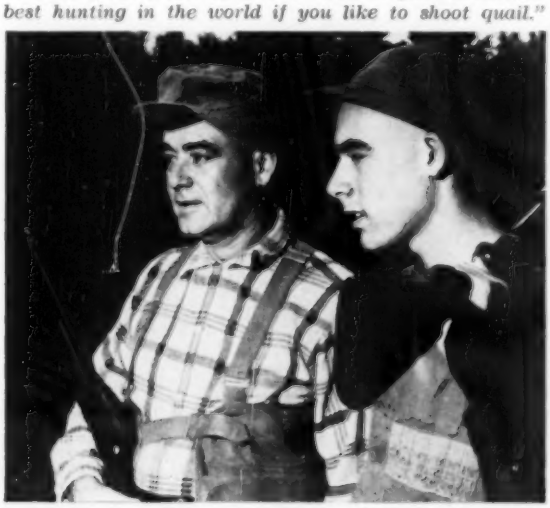
The Cooks have one son, Jimmy, 16, who plans to study medicine, and three daughters, Karen, 13, Carol, 12, and Lillianette, 10. It's a closely-knit family which finds much of its recreation as a group. Vacations have included several station wagon jaunts to the West, the mountains, and places of historic interest or currently in the news.

All the Cooks are interested in music. Lillian is an accomplished organist and pianist, Jimmy plays bass horn in the school band, and all three girls are taking piano lessons. Karen also plays the flute, and Carol, the clarinet. The doctor calls himself "a jackleg violinist." In addition to these instruments, the Cook home contains a mandolin, an excellent hi-fi stereo outfit (built by Doctor Jim), and a bagpipe, which to the family's chagrin will not work and is used for decoration only.

Surrounding the house are six acres of wooded land, giving the impression of living in a forest. From the veranda, the view is a tangle of slash pine, hickory, oak, and sweet gum. (*Continued on page 78*)

The family is a closely-knit group which enjoys much of its recreation together. Children are (from left to right) Jimmy, 16; Karen, 13; Carol, and Lillianette, 10.

Doctor and son Jimmy can go hunting and fishing almost in back yard. Declares Cook: "This is just about the best hunting in the world if you like to shoot quail."



How Progressive Patient Care Cuts Hospital Costs

Some hospital officials call Progressive Patient Care "the first major change in hospitals . . . a completely new concept and philosophy of patient care."

by HOWARD EARLE

Progressive Patient Care may embrace one to five phases in any combination:

INTENSIVE CARE—Grouping critically ill patients regardless of sex, diagnosis, or economic status. These patients are concentrated in an area where facilities are tailored to their individual needs.

INTERMEDIATE CARE—Concentrating patients who require only moderate nursing and medical care, whose ills are not of an emergency nature. These patients are beginning to coordinate their own care and may be ambulatory for short periods.

AMBULATORY CARE—Segregating ambulatory patients requiring diagnosis or convalescent care in hotel-type accommodations.

LONG-TERM CARE—Concentrating patients requiring skills and hospital services not available at home. Rehabilitation and physical therapy facilities are unique features of this unit.

HOME CARE—Extends hospital services into the home to assist the physician in the care of patients. This reduces the need for hospitalization and provides unique opportunities for making preventive services available to the patient and his family.

GROUPING PATIENTS according to their degree of illness and medical and nursing needs is gaining widespread acceptance among the hospitals of the nation. Most amazing in this novel development of PPC (Progressive Patient Care) is the enthusiasm for the program among patients and hospital staffs, once staff members become oriented and acclimated to its functions.

"PPC provides medical care tailored to individual patient needs with greater attention concentrated on the hospitalized, thus helping to relieve the shortage of nurses," says Hiram Langston, M.D., and thoracic surgeon at Grant Hospital in Chicago.

"There is no question but that PPC is permanent," comments Norman B. Bailey, executive director of the Hospital. "I am not sure there is any saving to the hospital in operating costs under the plan but patient relationships are improved because the patient pays only for the care he needs and receives."

Laura Ververs, R.N., supervisor of the hospital's intensive care unit, is an enthusiastic booster of PPC.

"I am sold on the plan because it concentrates medical care on patients who need it most intensively. During the past year I have seen many lives saved through the proper application of PPC, and in my profession saving lives is important. That's why I'm sold on PPC."

One patient—Mrs. Marie Harju—looked away from the television in the ambulatory zone long enough to comment, "This is the greatest advance in medicine in the last 50 years. I was here three years ago and came back two weeks ago for surgery again. I know how it was before and how it is now. There is no comparison in regards to care. Everything is

excellent now, especially here in the ambulatory zone. Just like living in a palace with servants to wait on me."

Actually, PPC is the organization of hospital facilities, services, and staff around the medical and nursing needs of the patient. Under this new concept, patients are grouped according to their degree of illness and need for care, rather than by traditional hospital grouping according to sex, age, type of illness, and economic ability.

This new plan for patient care is said to be giving thousands of patients the benefit of better medical care for less money. It has been in operation since July 1959, in Grant's 250-bed hospital on Chicago's near North Side. It divides the hospital into three distinct zones of care: intensive, intermediate, and ambulatory.

There are no hard and fast rules regulating a patient's admittance and movements through the zones. Of course, no patient is admitted to any zone except on orders from a member of the hospital's medical staff. The patient may be admitted to any zone and moved later, according to his medical needs as determined by his physician.

He may enter the intensive care zone as an emergency patient and, as he improves, move into the intermediate and then the ambulatory zones. Again, he may be brought into the ambulatory zone for diagnosis and, as his condition requires, move through the intermediate and intensive care zones and then, as he recovers, reverse the procedure.

Take the case of a Chicago businessman with a moderate income who was hospitalized for a physical checkup and observation following a series of severe headaches and fainting spells. Andy envisioned a mountain of bills as he entered the hospital's ambulatory zone.

He had a private room, maid service, and the full run of a library and central television lounge. He could entertain guests. The nearby cafeteria offered a variety of dishes for his meals. He shaved, bathed, and dressed himself. A registered nurse and a trained nurse assistant were on duty throughout the day to give any special attention he might require. His time was his own, except when undergoing diagnostic tests.

Andy's doctor ordered him moved to the intermediate zone in preparation for a serious operation. He went from there to surgery and then to intensive care. From there he moved to intermediate and finally back to ambulatory.

When discharged from the hospital, Andy was pleasantly surprised to find that for his hospital stay he was charged much less per day during the time when he needed so much nursing care; the rates were $16.50 a day in ambulatory, $22 a day in intermediate, and $37 a day in intensive care.

"A person going into a private room in the average Chicago hospital today must expect to pay at least $20 a day for the room," explains Executive Director Bailey. "If he needs private duty nursing around the clock, it will cost him $20 every eight

A nurse administers special treatment in the intensive care zone in Grant Hospital, Chicago. The registered nurses are specially trained for service in this zone.

PHOTO: GRANT HOSPITAL

Extensive use of glass for maximum observation of patients helps a nurse provide better hospital care in a special care unit at Rhode Island Hospital, Providence.

PHOTO: RHODE ISLAND HOSPITAL

These pictures taken in the North Carolina Baptist Hospital in Winston-Salem show ambulatory patients in hotel-type rooms helping to take care of themselves.

PHOTOS: DUO-BED CORP.

This self-care type of service helps the individual patient adjust to the hospital. Nursing care is planned around the patient who is progressing toward recovery.

hours, or $60 every 24 hours. This, added to the cost of the private room, would total $80 a day, compared to our $37 a day, and I know the patient would receive equal, if not better, care in our intensive care zone."

The intensive care zone offers the advantages of individual care with the equivalent of a private duty nurse around the clock. The zone is comprised of three six-bed units with one registered nurse and a nurse's aid assigned to each unit. There also are means for isolating patients when necessary. Nurses assigned to this zone are specially trained. The training is so extensive and diversified that the nurses are capable of coping with practically any emergency. Only staff nurses with this training are allowed in the zone.

"It is quite a strain on the nurses in the intensive care zone because of the eight-hour service," says Miss Ververs. "They cannot leave their post, except for lunch and coffee breaks."

Not all the nurses were happy advocates of PPC when it was inaugurated in Grant Hospital. Mrs. Cecelia Palm was a reluctant participant until she experienced what she termed a lifesaving contribution by the program. It occurred one April evening.

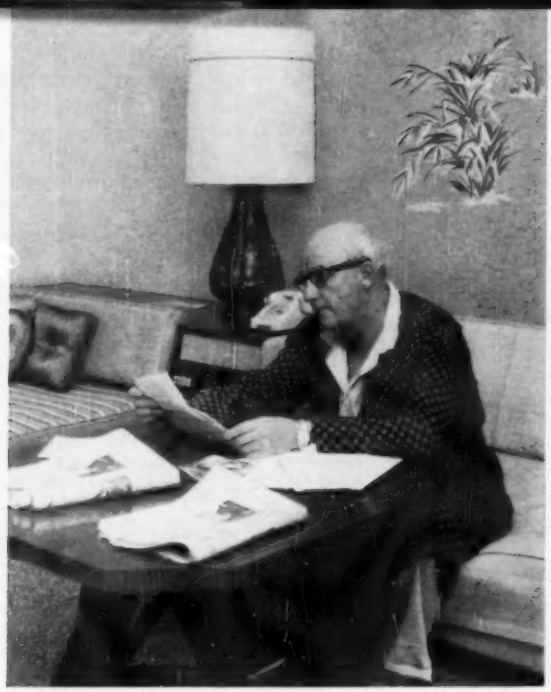
Nurse Palm was on duty as night supervisor. A patient who had undergone an appendectomy seemed unusually uneasy. When Nurse Palm discovered his sutures had pulled out, he was bleeding excessively. The proximity of the operating room and concentration of necessary medical equipment near the intensive care zone saved the patient's life and converted Nurse Palm to PPC.

Other nurses have been converted by similar experiences. They tell of one case in which a patient suddenly found his windpipe closed. He was suffocating because of his inability to breathe. Within three minutes he had been rushed into the operating room, an opening made in his windpipe to permit breathing, and his life saved.

"Had not the intensive care zone been so close to a concentration of medical supplies and equipment, a life would have been lost," explained a nurse later. "That turned the trick for me. I was all for PPC, so far as intensive care was concerned, after that."

Immediately adjoining the intensive care zone is a visiting room where relatives and friends wait to see those patients who are allowed visitors only five minutes during each hour. The visiting room seats a dozen persons comfortably, and is equipped with AM and FM radio. It can be readily turned into an extra unit for intensive care patients. Framed pictures on the walls hide outlets for oxygen and suction tubes, used in postoperative care.

The intermediate zone is spread throughout the hospital for use of patients too ill for the ambulatory zone and not sick enough to require intensive care. A patient critically ill may remain in the intermediate zone in a private room with private duty nurses, or be moved into intensive care. It depends upon the patient's physician. He always has the final word in determining where his patient will



The patient, usually in the later stages of convalescence, is expected to wait on himself to some extent, and if possible, go to the hospital cafeteria for his daily meals.

The rooms are made as attractive and comfortable as possible. Each room has wall-to-wall carpeting, contemporary furniture, paneled walls, and remote-control TV.

be placed in the Progressive Patient Care program.

The ambulatory zone is the biggest surprise to patients. Head Nurse Neva Sharpe says, "Some patients hear the zone spoken of as the self-care unit and think it means getting their own meals, making their beds, and even scrubbing the floors. But once they learn what they have in the matter of services and freedom, they all say it's the greatest."

Mrs. Mildred Benovsky, a patient who had been in all three zones, called ambulatory ideal. "No problems," she said. "Just like living in a hotel, only more homey. It's nice having guests come in. They can have coffee and a snack with me. I can have the lounge with television to entertain others, or the library to entertain me. I don't get this kind of care at home. It's too expensive."

How do physicians like PPC?

Doctor Langston thinks its fine. "We've got to realize the day of horse and buggy doctors is over. Medical patients no longer can be handled by one doctor alone. Nurses have provided this care in the past but now there is a shortage of nurses. This is due in part to the heavy load on hospitals because of the great increase in patients. It's also occasioned because the medical practice is doing more things today for more people."

The PPC program provides sufficient care to people who need it, according to Doctor Langston. He pointed out that the program specially trains nurses to care for the optimum number of patients while the ambulatory zone releases nurses for training and practice in the intensive care zone, where the need for them is much greater.

Medical Director William A. Hutchison, pointed out that some doctors were opposed to PPC at the outset because it upset their normal routine.

"It was necessary at first to call attention to the surgeons that their patients should go into the intensive care zone after surgery," says Doctor Hutchison. "It took a little time to educate them to the idea that we had nurses in the intensive care zone trained for thoracic, cardiac, and so forth in postoperative care, since the intensive care zone, to some extent, is an extension of the recovery room."

Doctor Hutchison emphasized that a small intensive care zone or unit is practiced as the recovery room in any size hospital. However, only a limited number of the 7000 hospitals in the country—about 270—have the three stages of PPC. Actually, two additional facets are under study. One is the long-term zone for chronic care or long-term cases which, Doctor Hutchison says, belong in isolated groups with special care. The second is home care, which concentrates attention on patients undergoing home treatment.

Among physicians, nurses, the hospital administration, and patients, the consensus is that PPC is a modern miracle in medical care. Perhaps patient Mrs. Lydia Dabrovalsky summarized the attitude toward PPC:

"I was in Grant Hospital three years ago and received what I (*Continued on page 81*)

Far-Reaching Fight Against Mental Retardation

(Continued from page 46)

This 1956 photo shows John and Mary Holter with son Casey in garage where Holter produced the valve which saved life of their child, a victim of hydrocephalus (water on the brain). Casey died in 1960 at age four in a drowning mishap.

near-normal life for Susie. Alerted by his condition, knowing the hereditary factors involved, doctors were able to test Susie in time.

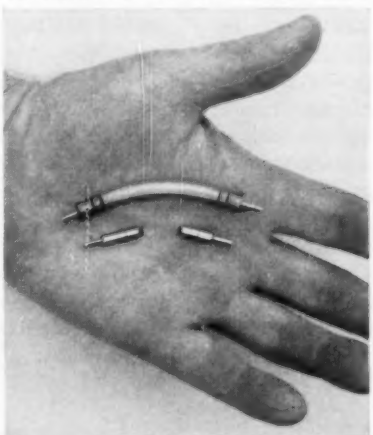
Would you be willing to do a simple test on 20,000 newborn infants to uncover the one baby whose mind could be saved from mental retardation? A screening program of this type is being carried out at scores of clinics and hospitals across the country. Already dozens of PKU babies have been spotted and placed under treatment.

Phenylketonuria is a metabolic disorder—a defect in the way the body uses essential foodstuffs to get energy and repair tissues. Because of a missing enzyme, children are unable to handle certain proteins. Hundreds of kinds of enzymes are needed for the normal functioning of the human body. The enzyme needed for digesting phenylalanine, a chemical found in all proteins, is normally in the liver. If a baby lacks this enzyme, undigested phenylalanine accumulates in his blood in toxic proportions. After a few months, the baby's blood may have 30 to 40 times the normal amount. Irreversible brain damage results. This was what happened to Susan's brother, Tommy.

The excessive amount of this chemical also throws other parts of the baby's chemistry out of order. One effect may be the lack of the chemical that would normally darken the baby's eyes and hair, which accounts for the fact that most PKU babies are abnormally blond and fair-skinned. Another effect is the excretion in the urine of a substance which turns green in the presence of ferric chloride.

This abnormal substance appears in the urine in the third or fourth week of life, at which time the baby should immediately be fed a diet from which most of the phenylalanine has been removed. The diet? Some fruits and vegetables, no protein foods such as meats and eggs, and just enough milk to supply that minimal amount of phenylalanine required to meet certain basic needs. The rest of the child's protein comes in the form of a powder from which the phenylalanine has been removed.

Holter valve drains excess fluid from brains of hydrocephalus victims. It has saved over 5000 from impairment.



Doctors try to keep PKU children on this diet for the first two or three years of life and longer, if possible. But by the time a child reaches school age, it is hoped that additional foods will be added. (Physicians emphasize that this diet is of value only to PKU children, and is of no help to children suffering from other forms of mental retardation.)

The major problem is to identify PKU babies at the earliest possible moment, before the brain has been damaged. The first PKU tests should be performed at the age of two weeks and repeated at monthly intervals. This new test takes about 10 seconds and costs less than a penny. A drop of a 10 percent solution of ferric chloride is placed on each baby's wet diaper. If the baby's urine is normal, a yellow spot appears. But once in 20,000 tests a green spot appears—evidence that the infant has PKU.

To protect us against such missing-enzyme diseases, nature has provided most of us with a double dose of each enzyme—one dose supplied by a gene inherited from the mother and the other from the father. About one person in 66 inherits only one such gene, and as a result, only one such enzyme. This one enzyme is enough to keep him healthy. But if a man and woman who have only one such gene apiece marry each other, the chances are one in four that a child of theirs will lack the gene and therefore the enzyme altogether. The child of this union will have PKU.

A dramatic breakthrough was made in 1956 when Doctor Hsia and his associates discovered that the abnormality in phenylketonuria could be detected in parents through a special blood test before it appears in their children. They did this by giving phenylalanine tolerance tests to parents of proved PKU children and an equal number of normal controls. Phenylalanine was given by mouth to both groups, and blood plasma was studied one, two, and four hours later. At each estimate, the levels of phenylalanine in the blood of carrier parents were about twice those of the normal controls.

The parent carrier of PKU has

only one gene for the enzyme needed for digesting phenylalanine. This defect is apparently too slight to bother him when he is on a regular diet. But if a strain is put on his system by giving him an additional load of phenylalanine, he is unable to digest it, and it shows up in higher levels in his blood.

Now parents and immediate family can know ahead of time who among them is likely to have affected children. If parents, knowing the odds, still wish to have children, prompt treatment of the child may still bring victory over the disease. As recently as five years ago to say that any such recessive tendency could be detected by test was inconceivable. One could only wait until two recessives were coupled and the abnormality appeared in the next generation. Although PKU occurs rarely, carriers are very common—at least one in 66 people.

THIS discovery reaches far beyond the circle of PKU victims and their families. It has implications in dozens of other diseases. Why? *The detection of parent carriers of PKU gives hope that many unknown carriers of hereditary traits of a biochemical nature can ultimately be detected by laboratory tests.*

To appreciate the potential impact this may have on the lives of all of us, we must know that certain fundamental principles in heredity can be applied to all forms of hereditary diseases. Family traits are passed on from parent to child by several hundred genes grouped on 23 pairs of chromosomes. Half of the chromosomes with their genes and corresponding traits come from the father to be matched with those of the mother. In conception, the matching of genes takes place with dominants taking precedence over recessives. Hereditary diseases such as PKU are recessive, and it is only when two such parents marry that their baby can get a double dose of the abnormality and the disease.

A gene is no longer considered an abstract unit of heredity but is concerned with definite chemical actions. If a gene is damaged, it will not produce the enzyme necessary for proper use of nutrients.

Every normal person is believed to be a carrier of an average of eight detrimental genetic defects. More than 70 are known. Should he marry a person with one of these same eight recessive characteristics, his children face the possibility of acquiring these inborn errors of metabolism. Among them are various bone disturbances, kidney disease, endocrine disorders, special forms of anemia, bleeding and clotting defects, diabetes, muscular dystrophy, and congenital anomalies such as clubfeet, mongolism, certain heart malformations, and Rh factor blood disturbances.

Already this genetic research has made it possible to detect potentials for structural or metabolic abnormalities before they occur in children and possibly in time for successful treatment, not only in the case of PKU but in the following brain-damaging, missing-enzyme diseases as well:

Galactosemia, an inborn error of carbohydrate metabolism which results in an inability to digest galactose, a sugar present in all kinds of milk and milk products. This condition causes not only mental retardation but vomiting, diarrhea, jaundice, malnutrition during early infancy, cataracts, and cirrhosis of the liver.

Cystic fibrosis of the pancreas, a hereditary disease due to a pancreatic deficiency which results in severe pulmonary disease and disturbances of the sweat and salivary glands.

Glycogen storage disease (von Gierke's disease), a congenital disorder of carbohydrate metabolism due to a deficiency of the liver enzyme.

Idiopathic hyperlipemia, an excess of fat in the blood which results in atherosclerosis (hardening of the arteries) and cardiac complications.

These diseases can now be readily diagnosed and controlled by changes in diet.

WHILE the most dramatic of the recent advances in mental retardation involve the diseases mentioned above, there are recently developed methods for the detection and treatment of other brain-damaging diseases:

Rh disease or erythroblastosis. Every prospective mother should have an Rh blood test early in pregnancy. If the result is Rh negative, her husband should be tested. If he is Rh positive, they may have an Rh positive child. The mother, who is Rh negative, may develop antibodies against the blood of the unborn, Rh positive child. Blood destruction that results may cause permanent damage to the child's brain. Many hospitals are now equipped to perform an exchange transfusion. As soon as the baby is born, all blood is drawn off and simultaneously replaced by blood of the proper type.

Thousands of babies are being saved from mental impairment every year through this process. But it is estimated that if these tests were made on every prospective mother, 95 percent of the children with this disease could be saved from brain damage or death.

Syphilis. Congenital syphilis is another cause of mental retardation and can easily be prevented, yet thousands of cases are reported every year (5215 in 1959, last year for which figures are available). An unborn child can get this disease from the mother who, in most cases, is unaware that she is infected. Most of the states now have laws that require doctors to give blood tests to expectant mothers early in pregnancy. If the results of a test are positive, penicillin will not only cure the mother but protect the unborn child.

UNFORTUNATELY, many mothers don't go to a doctor early enough in pregnancy, and some doctors have not performed the test routinely. Experts recommend that every woman ask for this test early in pregnancy, even if she has no reason to believe the results will be positive.

Hydrocephalus or "water on the brain." In this condition, the normal drainage of fluid from the child's brain is shut off because of a defect in structure. The fluid accumulates, causing the head to swell and crushing the brain tissues so they cannot function.

Formerly considered hopeless, these cases can now often be saved by surgery. A plastic tube with valves at each end is implanted, one end in the brain cavity and the other in the jugular vein. When the pressure of fluids in the brain rises, the valve at this end opens up and the excess fluid drains through the plastic tube into the jugular vein.

Invented in 1956 by a Philadelphia technician John Holter, in an effort to save his own hydrocephalic child, these tubes have already saved more than 5000 cases from brain impairment. Some 7000 of the tubes have been distributed in 35 countries.

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German measles. In childhood, this is a mild disease, and one attack often gives immunity for life. But if a woman doesn't have this disease during childhood and gets it during early pregnancy, it can damage some of her unborn child's special senses.

Since there is no vaccine for rubella, experts advise that young girls be exposed to this disease before the child-bearing period. But before exposing your daughter to a playmate who is ill, be sure that the playmate has been properly diagnosed as having rubella and not a more serious disease.

While the progress on all these fronts is hopeful, experts caution against too much optimism. There is still a great deal to be done. Very little, for example, is known about mongolism—one of the severest and most common forms of mental retardation. This disease accounts for approximately 20 percent of severely handicapped children. It is estimated that one child in every 600 births is a mongoloid.

A recent discovery, which may open the door to the conquest of mongolism, revealed that it involves the chromosomes (microscopic strands of genes within each cell that determine inherited characteristics, such as height and eye color). Most of us have 46 chromosomes arranged in pairs. In some mongoloids there is an added, unpaired chromosome in each cell of the body.

To some researchers, this suggests that mongolism could begin with an irregularity in the human egg before it is fertilized. Further research will be required to follow up this theory and to explore cretinism (a thyroid problem causing dwarfism and mental retardation) and tuberous sclerosis (tumors in the ventricles of the brain).

In the past, medical researchers, bent on the conquest of the quick-killing, infectious diseases that we acquire after birth, had done little probing into the diseases with which we are born. "Now that polio and other infectious diseases are less of a problem, we of the medical profession are searching for a better understanding of how hereditary diseases are transmitted from parent to child," says Doctor Hsia.

Already, research on mental retardation has received a shot in the arm. The National Association for Retarded Children has sponsored a

survey of promising leads against retardation and has launched a medical research fund to support selected projects. Other organizations such as the Ford Foundation, the Association for the Aid of Crippled Children, the National Foundation (formerly National Foundation for Infantile Paralysis), and the National Institutes of Health (as well as other federal agencies) are contributing substantial funds to retardation research.

At such research centers as the University of Wisconsin, Johns Hopkins University (Baltimore), Massachusetts General Hospital (Boston), and the University of California (San Francisco), investigators are concentrating on biochemistry, virology, nutrition, and embryology in their search for causes and cures.

Medical science is also moving ahead on ways to prevent conditions previously considered hopeless. Among the areas now receiving greatest attention are: control of metabolic disorders, surgical intervention, improved techniques of delivery, and elimination of damaging conditions during pregnancy.

Though authorities caution that the conditions in which preventive measures can now be taken represent only a very small percentage of the mentally retarded, the outlook is optimistic. Says Dr. Richard Masland in his study, *The Prevention of Mental Subnormality*, "One cannot escape the conclusion that progress in the prevention of mental retardation will take place by small advances along a broad front." END

Coming: New and Better Antibiotics

(*Continued from page 37*)

cal firm, and in 1957 constructed a synthetic penicillin that was indeed active, but too complicated and expensive for commercial production.

Nevertheless, the work was satisfying a lot of scientific curiosity. There are several natural forms of penicillin. All of them proved to be built around the same molecular "core," and to differ only in side chains of atoms attached to this nucleus. This nucleus was identified as 6-APA (6-aminopenicillanic acid).

Exciting possibilities and formidable obstacles now opened up. If you could somehow obtain enough pure 6-APA, you might attach endless varieties of side chains to it, and create compounds superior in some way to ordinary penicillin—or colossal flops.

Early in 1959, British scientists of Beecham Research Laboratories found that they could recover 6-APA by stopping the fermentation process of penicillin-making at a certain stage. Microbiologists of Chas. Pfizer & Co., a leading American antibiotics maker, screened scores of microbe families and found several that were feasible 6-APA producers. Some bugs worked straightforwardly, and some worked backward to strip penicillin to its naked nucleus.

With supplies of penicillin cores available, chemists set out to attach various side chains to the key molecule. Each compound thus created had to undergo many animal and other tests to see if it had possible medical value. Of 500 synthetic penicillins created in a few months, only two or three which had modest advantages in some circumstances came into medical use.

One penicillin synthesized by Dr. F. P. Doyle of England was just another disappointment in its earliest tests. It seemed to be merely a weak penicillin G, the form most widely prescribed—until it was tested on animals with "resistant staph"' infections. These grave infections, which typically occur in hospitals, are caused by strains of staphylococcus germs that are little affected, if at all, by penicillin and tetracycline antibiotics.

The culprit is "golden staph," so called from the color of its culture. Biochemical studies have ferreted out a secret of the germ's chemical armor. It manufactures a protein molecule of specific structure, called penicillinase. This is an enzyme which destroys penicillin before the drug can harm the germ.

Tested on animals with overwhelmingly resistant staph infections, Doctor Doyle's synthetic penicillin routed the stubborn germs. Trials in human patients showed the same remarkable action. The synthetic penicillin, born of British and American collaboration, has been named Staphcillin. This drug should be used only in very serious infections caused by strains of staphylococci resistant to other antibiotics. It must be given by injection.

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duct of the newer chemical knowledge. The unique arrangement of side chains on its nucleus gives the synthetic penicillin a strange immunity to a germ-enzyme designed to destroy it. It is as if one of two boxers in a ring were given a third arm (in this case, an anti-enzyme arm) to fend off attack while a knockout punch is delivered against the enemy.

Cultures of microbes which can make "raw" molecules for synthetic penicillins are among the tens of thousands that now sleep in antibiotics libraries. These are pedigreed cultures, with their identities, histories, heredity, character traits, and other facts recorded by elaborate bookkeeping.

Microbes "invented" familiar antibiotics. But mixtures of crude juices, carelessly excreted in infinitesimal amounts by the life processes of microbes, left to themselves, are useless to man. Unceasing inventiveness by scientists and industry is necessary to make the invention practical.

WE take our antibiotics in capsules or tablets or fluid forms that the doctor injects. That isn't the way microbes make them. The first penicillin used in medicine was a yellowish-brown powder. It was as pure as men could make it, but only one-twentieth of the powder was active, the rest inert. Through the years, inventive scientists have refined the drug, combined it with other substances, contrived to make a penicillin dose more long-lasting, more quickly absorbed, or having other special virtues—all available in many dosage forms a patient may need.

Chloromycetin, Aureomycin, and Terramycin are broad-spectrum antibiotics which, more than a decade ago, extended the range of drug control to include many infections that penicillin couldn't touch, as well as many that it could. Chemists immediately began to analyze the new molecules. Chloromycetin has a relatively simple structure. But it took several years to determine the molecular make-up of Aureomycin and Terramycin. The two drugs proved to share a four-ring nucleus called tetracycline. This was the starting point for many forms of tetracycline antibiotics which are today among the most widely used in medicine.

Not all antibiotics research results in immediate improvements. How is a drug used by the body, broken down, excreted, absorbed by tissues? Many specialists are trying to find out. Pfizer scientists recently "tagged" the carbon atoms of Terramycin with radioisotope C^{14}. Researchers can now trace the radioactivated antibiotic through intricate body pathways. Certain tissues absorb the drug most greedily. No drug miracles have resulted. But in some diseases, a drug aimed at a specific tissue as directly as a rifle bullet might be of inestimable value, and knowledge may some day make this possible.

MICROBES cannot produce antibiotics in sterile soils. They must be properly fed and tenderly cared for to give of their best. Microbe appetites, like some human ones, are finicky. In giant fermentation tanks where microbes produce drug molecules, there must be enriched foods abundant in raw materials. Antibiotics research is closely tied in with nutrition. Indeed, residues of streptomycin manufacture are a commercial source of vitamin B_{12}.

And how do living things grow? Why did you stop growing in your 20's instead of becoming 10 feet tall? Why does your baby grow faster in his first year of life than he ever will again? What turns growth on and off at the right time? What speeds or inhibits it? These are challenging mysteries, profoundly interwoven with life and health.

Certain antibiotics speed the growth of poultry, swine, and some other species so effectively that production of meat and eggs has been significantly increased and cheapened. How can drugs do that? It seems reasonable that antibiotics suppress harmful bacteria of the intestinal tract and thus leave more vigor for growth. But this explains little about the deep mysteries of growth, and it remains for research to give better answers.

Another aspect of microbe culture is the same as the ostensible purpose of horse racing—to improve the breed. Researchers are constantly working with strains of organisms which differ slightly from their brethren in heredity, and thus may produce an antibiotic more lavishly, or effect some chemical transformation, or do something different or better than their ancestors.

This requires shameless spying on a microbe's personal life. Some workers have found that reproductive processes of bacteria, at least some bacteria, are sexual in nature. This is a quite new discovery. Until recently, only another bacterium could know. Now there are many scientific reports which might be entitled *The Sex Life of Bacteria, or What Every Young Microbe Should Know*. Such studies add a little to understanding of mechanisms of heredity and of spontaneous and induced mutations in cells, of concern to human genetics.

Most of our familiar antibiotics derive from mold organisms obtained from soils in which they live. There are exceptions. A highly productive strain of penicillin organisms came from a moldy cantaloupe bought in a Peoria fruit market. Yet the majority of antibiotic microbes have been isolated by a tedious, expensive, needle-in-a-haystack process of soil-screening.

If you want to find a new antibiotic in your back yard, take a spoonful of soil rich in organic matter and shake it with lots of water to make a thin soup. Streak some of this on agar plates and put into an incubator. In due time the plates will be speckled with fluffy or wrinkled molds of any shade of the rainbow.

NOW your research gets rougher. If you are experienced, you will recognize many mold growths that have been rediscovered tens of thousands of times. So you keep trying until you find a mold that looks promising, and grow enough of it to extract some juices which you test against discs impregnated with various disease germs. If the juice seems active, you carefully grow more of it by miniature fermentation procedures, and inject it into white mice inoculated with disease germs and mice that are perfectly well. Probably you abandon the juice in disgust because it kills too many healthy mice. Even if it doesn't, you are thousands of leagues away from an antibiotic of medical value.

Yet monotonous soil-screening procedures continue in laboratories despite thousands-to-one odds against success. Most of us know the names of glamorous antibiotics such as penicillin, streptomycin, chloramphenicol, tetracyclines, neomycin, erythromycin. But there are a number of lesser-known antibiotics for which there is no large market, but which have unique and often life-

saving value for special purposes—fumagillin for amebic dysentery, nystatin for yeast-like infections such as thrush, novobiocin for resistant staph, and others.

There is need for other antibiotics to fill gaps in therapy, to overcome drug hazards such as allergic sensitization, and to keep ahead of the wily adaptability of germs, and the search takes some novel and exotic directions. Certain corals secrete substances which inhibit acid-fast microbes such as tuberculosis germs. A species of giant toadstool yields calvacin, an antibiotic extracted by Armour scientists, which shows activity as an anti-tumor agent. Flowering plants, lichens, coniferous trees, the mountain ash, mushrooms, algae, are subjects of research as potential sources of new antibiotics.

The search is for new, unique, effective molecules. But there is no common chemical structure which identifies an antibiotic. Their molecules are bewilderingly varied, but composed of familiar and some quite simple building stones—sugars, amino acids, other units familiar to chemists. Once a potent new molecule is discovered, research can adapt it to human use and probably improve upon it.

Nowhere is antibiotics research pursued with more urgency than in the screening program administered by the government's Cancer Chemotherapy National Service Center and carried out with the know-how and facilities of several pharmaceutical firms. It is a large-scale, frankly empirical hunt designed to discover brand new molecules, of possible value in cancer, while patients who need them are still alive.

MOST of the substances screened by animal and tissue culture tests are antibiotic broths, although many synthetic compounds are included. One center alone screens 30,000 substances a year. A very, very few of these go to the Cancer Chemotherapeutic Center for evaluation and possible clinical trials. Odds against finding curative drugs for cancer are heartbreakingly great. Yet an impressive number of chemical compounds—including such well-studied antibiotics as azaserine, sarkomycin, puromycin, actinomycin, and others—have shown definite powers to restrain, though not to cure, certain types of cancer in animals and human beings.

Many eminent scientists are confident that cancer, though not a contagious disease, is caused by viruses or is suspiciously associated with viruses. This is unquestionably true of some animal cancers, and it may be true of human cancer. If curative drugs for cancers should some day emerge, research that went into their making may also produce drugs to cure virus diseases such as measles and polio and the common cold.

No responsible researcher will set a timetable for new wonder drugs. But you can be quite sure what they will look like. They will look like today's drugs—like trivial powders, white or colored, like liquids, like unglamorous aspirin tablets. Nowhere will the research and knowledge that made them possible be visible. But it will indubitably be there.

It's something to think about, the next time you take a pill. END

First Aid for Lagging Lawns

(*Continued from page 14*)

wooden headers held in place with stakes. Loosen top soil, grade it with a board, and tamp it. Remember to give it a slight pitch for drainage. Allow for the fact that bricks settle in sand (you just lift badly-settled bricks and cushion with more sand), put down a two-inch to three-inch cushion of sand and level it. Check with a spirit level, then put down boards if you must walk on the sand.

For a terrace, start with a strip of your pattern across the center of the area and lay bricks from this point out to the sides. Lay bricks as close together as you can and sweep sand into cracks.

Another material you might try for your week-end paving project is flagstone. Flagstones lend themselves readily to a terrace with "plant pockets"—openings left for attractive plantings right on your terrace—and can be set similar to brick.

You can study up before you decide definitely what paving material you'll use. And set aside another week end for putting an attractive planting around your terrace. Gardening and handyman books from your library will answer your questions and give you still more suggestions.

And in some of these books (or at some stores) you'll find patterns for easy-to-build outdoor furniture—benches, tables, and chairs. It's amazing what satisfying week-end projects you'll discover if you just look around.

For another instance, how would you like to have a toolshed? Don't throw up your hands in horror. You can put a "toolshed" right on your garage wall in no more than an hour or two!

Simply attach two boards to a wall of your garage, spaced so you can nail the top and bottom of a wide strip of pegboard to them. Your hardware dealer has hooks that slip into the pegboard. These hooks come in a variety of sizes and shapes to hold all sorts of garden tools. With cement nails, secure a short board to the floor of the garage to hold your mower in place. And above your new tool rack, out of the reach of children, make a shelf to hold garden dusts, sprays, and other potentially hazardous items. How's that for a toolshed in a hurry?

Devote one week end to licking the weed problem so you can sit on your terrace and look at your flower beds without feeling guilty because you're not tackling those weeds. Cover your flower beds with an inch or two of mulch—try peatmoss or cocoa bean hulls—and you'll find you'll have about 99 percent fewer weeds to cope with for the rest of the season!

Have a long slope you hate to mow? Then turn it into a beautiful combination rock garden and retaining wall. Treat the slope as a series of ledges. Use stones of varying sizes, and be sure to distribute the largest stones at random over the entire bank.

Working from the bottom up, imbed rocks to form a series of small ledges. Leave planting pockets between stones, tops of which should be almost level.

Set aside a lazy rainy week end to go over the catalogs and plan your annual garden in advance. For a very dramatic effect, plan a color scheme tied in with the colors of your home. If your home is brick, or is painted pink and white, for instance, you might plant snapdragons, petunias, and asters in shades of pink, rose, and white. A good nurseryman will help you select seedlings in the proper colors for you and provide suggestions on hardy plants that will fit into your garden decorating scheme. END

Follow the Ohio River Route

(Continued from page 40)

PHOTO: PITTSBURGH CHAMBER OF COMMERCE

The Ohio River is formed at peak of Pittsburgh's Golden Triangle where the Monongahela and Allegheny meet.

And up and down the river are ferrys crossing from bank to bank with their never-ending loads of automobiles and pedestrians. They're fun to ride and excuse enough in themselves for crossing to the other side. Usual charge is about $1 per car.

If you're boating through the Ohio valley you can come ashore for side trips. In any sizable city along the stream you can rent automobiles.

A network of roads keeps the highway traveler almost in sight of the river the length of its valley. For 65 miles below Wheeling, the Ohio is sandwiched between Ohio's Route 7 and Kentucky's Route 2. Highway 7 hugs the river bank until it joins U. S. 52 at Huntington and that fine highway carries you on the edge of the stream all the way to Cincinnati.

Cross the river into Kentucky on Highway 42 and within an hour you're out above the Ohio again on one of its most majestic stretches. Then out of Louisville U. S. 60 keeps you within a short drive of the river all the way to the Mississippi.

But to put a trip along the Ohio in its proper order let's begin where the waters begin, and follow them to that point where the Ohio fattens the Mississippi. To be sure, you may join the tour wherever you like and leave when you must, but the Ohio itself starts in front of Pittsburgh's famous Golden Triangle. It's

A river barge deck hand works hard to secure his craft. Next to the Mississippi, the Ohio is our busiest river.

here that two mountain streams, the Monongahela and the Allegheny come together to form the Ohio. Already the Ohio is a big stream, one of America's great inland waterways.

But take time to explore Pittsburgh. Want a bird's eye view? A 30-cent ticket will take you on one of the unique hill-climbing trolleys that leave every 10 minutes for the top of Mt. Washington.

Or you can start right down at water level. Two river cruiser companies, Gateway Clippers and Golden Triangle, will take you on the three rivers as long as you care to explore them. A one-hour trip costs $1.25 and children go at about half price.

For a first look at Pittsburgh one of the 30-mile guided sight-seeing tours will acquaint you with the city. Through summer months buses will pick you up at major hotels and take you to prime points of interest. Fare is $3 for adults, $1.50 for children.

At the point where the Ohio begins, a solitary blockhouse still stands. This is a remnant of old Fort Pitt, once a stronghold standing guard over the prized point. Visiting hours are nine to five, and two to five on Sundays.

If time permits, Pittsburgh offers still more. At the Aviary-Conservatory you can see free-flying tropical birds in a glass-enclosed garden of palms. Admission is free. Or for more ancient animals you can stop at the famous Hall of Dinosaurs in the Carnegie Museum. There is no admission charge.

Orchids anyone? An outstanding collection grows at the Phipps Conservatory. The Art Gallery is open 10 to five. Or there is the zoo, including the children's zoo, open from nine to six.

And the world champion Pittsburgh Pirates may be playing out at Forbes Field.

But the Ohio has a long way to flow and you've just begun.

Once away from Pittsburgh, the river makes a great sweep to the north before it begins its trip south and west. For its 40 miles in Pennsylvania the river is flanked by steel mills, coke ovens, and power plants. Here is one of the world's most heavily industrialized valleys. And on into West Virginia for another 60 miles the river valley is still filled with great industries.

But they begin to thin out. There are long stretches of open country where the Ohio flows past wooded hills. Downstream, bridges come at less frequent intervals. Hills are often farther back from the river. There is more open farm country.

As the river swings westward away from the foothills of the Allegehenies you follow U. S. 50-A into Marietta, gateway to the Northwest Territory. The old Land Company office, oldest building in Ohio, still stands here. Fine old homes show plainly the English influence of the early settlers. *(Turn page)*

The Delta Queen, *going through a Kentucky dam lock, is one of the few stern-wheelers you'll see on the Ohio.*

PHOTO: KENTUCKY DEPARTMENT OF PUBLIC RELATIONS

At Serpent Mound State Park, Ohio, primitive inhabitants who lived here before Indians, built mounds.

In three rooms of the Campus Martius museum at Marietta College is one of the finest collections anywhere of early river boat models and equipment tracing the history of man's travel on the inland waterways.

Downstream a short drive along Highway 7 from Marietta, past the village of Belpre, you can see a long, partially-wooded island.

Here, on historic Blennerhasset Island, Aaron Burr once hatched his treasonable plot to cut away a section of the South for his own kingdom. The magnificient mansion, the center of social life in the Marietta community and home of Harmon Blennerhasset, once stood there. Today corn grows on the island.

In almost every community along the river you can find points of current or historical interest. Where else will you find a monument to an apple? There is one along Highway 7 at Proctorville, Ohio, in memory of the Rome Beauty, first grown here in 1816.

There are still bits of wilderness country left. One of the finest of them is Ohio's Shawnee Forest near Portsmouth. Here you can escape cities and crowds for a day of roaming over 135 miles of gravel road through 56,000 rugged forested acres. There are lakes, campsites, and picnic facilities. And visitors are welcome to climb any of the three fire towers and look for miles out over the Ohio River hill country. Six miles southwest of Portsmouth you can leave U. S. 52 and follow Highway 125 into the heart of the Shawnee Forest, and travel the numerous roads maintained there.

AT Portsmouth you're only a short drive from one of the strangest earthworks in all America. Here you're in the heart of the country once occupied by the Moundbuilders who inhabited the valley ahead of the Indians. For reasons best known to themselves, the Moundbuilders piled earth up in all manner of shapes. Some of these mounds were burial mounds; some were forts.

North of Peebles, Ohio, Moundbuilders built a 1300-foot serpent with an egg in its mouth. It's still there, egg and all, winding along a ridge, in Serpent Mound State Park. There is no charge to enter the park. You reach Serpent Mound by turning north off U. S. 52 on Highway 104 west of Portsmouth. Then follow Highway 73 for 28 miles to the park.

There are other famous mounds through the Ohio Valley. And the best collection anywhere of Moundbuilder artifacts is in the Ohio Archeological and Historical Society Museum in Columbus.

Overlooking the river on Highway 52, only 26 miles east of Cincinnati, is a tiny state park with a little white frame cabin. This is the cabin in which General Ulysses S. Grant was born. Ohio operates it as a small museum now and charges 15¢ for adults and 10¢ for children.

GRANT was one of three United States presidents who came from this southwestern corner of Ohio. Others were Harrison and Taft. Harrison's tomb is at North Bend not far from Cincinnati.

Another president knew the Ohio well. Abe Lincoln crossed it on his trips from Kentucky to Indiana, and for a while, as a youth, even operated a ferry across the river at Tell City, Indiana.

Almost in the center of the Ohio Valley, Highway 52 brings you into Cincinnati, old Queen City of the West. This is the city Sir Winston Churchill some years ago proclaimed the "most beautiful inland city in America."

For a high-angle view of Cincinnati go to the top of the 48-story Carew Tower. Admission is 50¢. Take your camera along so you can photograph the city's buildings, the river bridges, and the hills of Kentucky across the river.

While you're in town you might want to see the Redlegs, first professional baseball team in the country, play a home game out at Crosley Field. Out North Vine Street is the Zoo, one of the finest anywhere. Admission is 50¢ for adults and 25¢ for children. It's here, during the summer months, that famed opera stars come to sing in the unique "Opera at the Zoo" within sight of the lion house.

In Eden Park, near the downtown section is a new Natural History Museum, the Krohn Conservatory with its collection of exotic plants, and the Art Museum. All are free.

Almost in the center of town, the Taft Museum, no admission charge, housed in a mansion, once home of the Taft family, contains one of the finest collections of paintings and furniture of any small museum.

There are excellent city and county parks around Cincinnati, places where you can picnic, fish, play golf, practice archery, or camp.

Coney Island on the river bank on Route 52 east of town is one of the country's finest amusement parks and a long-time Cincinnati tourist magnet.

If you would like a trip through a soap factory or the packaging plant of a large grocery chain, a phone call to the Chamber of Commerce or the companies themselves will give you details on regular tours for visitors.

If you are in Cincinnati over the week end you may want to spend several hours on one of the regular week-end cruises of the Johnson party boats. During the summer months the party boats are scheduled on Saturdays from 1:30 to 4:30 p.m. (adults $1, children 50¢), and on Sundays from 2:30 to 5:30 p.m. (adults $1.50, children 75¢).

Cincinnati is also the home of the Green Lines, operator of the famous old *Delta Queen*, last remaining large passenger boat on the inland waterways. Best known of the *Delta Queen* trips is the annual journey down the river to the New Orleans Mardi Gras. She also makes four other trips during the year (April, May, September, and October) and the 20-day round trip costs between $340 and $525 depending on accommodations. The *Delta Queen* is also one of the remaining few stern-wheelers you may pass on the Ohio.

SOME 60 miles below Cincinnati is Madison, Indiana, one of the finest boating centers along the broad Ohio. Madison has a public launching site. This in early autumn is the scene of the annual Madison Regatta which brings 50,000 people to the river banks.

Above Madison, on a 500-foot limestone cliff is Clifty Falls, one of Indiana's finest state parks. Here there is a lodge, and cabins, camping space, hiking trails, horseback riding, golf, swimming, and moonlight river cruising. If you would like to pause for a day or two in your trip along the Ohio, this is one of the best of outdoor settings. Meals and lodging inside the park may be had for as little as $7.25 daily.

When you reach Louisville, you have traveled three-fourths of the Ohio's meandering trip through its valley. But don't hurry around Louisville. You're in the heart of some of

the country's finest horse racing here. The first Saturday in May sets the pace with the Kentucky Derby at Churchill Downs. From here, driving east on U.S. 60 to Lexington, you can take side trips to famous Bluegrass horse farms, many of them open to visitors.

A short drive down Highway 31-W is Fort Knox, with the U.S. Gold Vault and the General Patton Museum. Or 40 miles down 31-E is historic Bardstown where "My Old Kentucky Home" is open to the public.

Bird artist John James Audubon was one of the early travelers through this valley. The state of Kentucky maintains a museum for his works at Audubon Park just north of Henderson on U.S. 41. Audubon did much of his painting here and you can see the finest of his works.

Men are busy today remodeling the Ohio to make it serve their needs. You'll see them in several places. It's all part of a long-term plan in which 21 higher dams will replace 46 low old ones. The locks that let boats past the dams are being lengthened from 600 to 1200 feet. This will allow the longest tows to pass through as single units.

This summer, crews will have work under way on dams at New Cumberland, 55 miles below Pittsburgh, at Pike Island, Greenup, Kentucky, Captain Anthony Medahl Dam 34 miles above Cincinnati, Markland, Indiana, and Louisville. Sidewalk superintendents are welcomed. The Corps of Engineers has even erected towers from which you may view and photograph the remodeling of the Ohio.

If you're planning to fish the Ohio, and many do, there is one important thing to bear in mind. The Ohio is not in Ohio at all. The river, all of it, belongs to the states on its southern shore. You will need Kentucky or West Virginia licenses.

This arrangement established by an early Congress, has long been a matter for discussion between states up and down the river. It has affected more than fishing. There was once a youthful couple joined in wedlock by an Ohio magistrate on a river boat off the shore at Cincinnati. The couple learned, belatedly, that the magistrate was not authorized to marry them in Kentucky. The marriage was later legalized on the Ohio's north shore.

The Ohio Valley has seen great changes since the times of the brawling keel beaters, the river pirates, and the restless homesteaders heading west into a new land. From little boats to big, from shallow waters to deep, from wilderness to fertile farms, rich industry and busy people have changed this river.

At Cairo, Illinois, the Ohio, king of waters all the way from Pittsburgh, is swallowed up by the great Mississippi. But for nearly 1000 miles it cuts through the heartland of America, a valley of variety for all who travel its course. END

International Healers of Body and Soul

(*Continued from page 25*)

to grass roots medicine, at government and mission hospitals and clinics far removed from the "ivory tower" classrooms in which they had thus far learned medicine.

Last March, 30 more medical students (eight accompanied by their wives) were given grants for the same purpose, this time traveling into 19 countries. Next year, about 30 additional fellows are expected to be named. It is the only program of its kind.

The goals of the fellowships are as varied as the students who receive them.

But all the fellows saw at the conclusion of their overseas experiences the great medical needs around the world, learned something of the barriers of time and distance which separate nations, and learned something, too, of how these barriers are overcome. Many of the fellows felt, on the basis of the needs they saw, that they will return to underdeveloped areas after completing their medical education to help to overcome some of these pressing medical problems.

The fellows did much more than had originally been expected. Working under fully trained and licensed physicians, for example, one fellow was instrumental in establishing a "walking blood bank" among the Igorot tribes in Northern Luzon. Among people (former headhunters) steeped in superstitions against blood transfusions, it is not exaggeration to say this represents a significant milestone.

On the wind-swept altiplano of Bolivia, where an estimated 60 percent of the population is seriously ill, one fellow spent more than 48 hours with an Indian woman in childbirth, finally completing surgical repair by the light of a penlight; a kind of care the woman simply would not have received otherwise. Without the care the child undoubtedly would have died, and probably the mother, too.

In Southern Rhodesia, a fellow conducted TB and intestinal parasite tests on native children, turning up cases which otherwise would have been untreated simply because they would have been unknown.

In Iran, a New York medical school senior worked with two Iranian midwives to maintain a clinic in the desert.

Much of what was accomplished cannot be measured in terms of patient visits or surgical reports. Much of it is the attitude toward medicine that a young man brings back from a summer spent with Albert Schweitzer, or at a MEDICO clinic in Iran, or at a church-clinic in Java.

Wherever the fellows served, medical care was extended simply because they gave a pair of extra hands to the always understaffed operations. The value of the program to the overseas operations is probably best shown in the fact that all the proctors were enthusiastic about the program and expressed interest in having other fellows with them in the future.

In many cases, a trip to a foreign country can be no more hazardous than a trip from home to office. However, occasionally the short-term medical missionary finds he has dropped into a hotspot of national activity. Such was the case with CMS member Titus Johnson of Chicago, who arrived in the Belgian Congo last summer just prior to the government changeover which resulted in nationwide riots and chaos.

Ten, including Doctor Johnson, sought temporary refuge from the turmoil in French Equatorial Africa. Just short of the border, a group of Congolese troops halted them. Doctor Johnson was thrown into a ditch, a bayonet pressed against his throat. His life dangled on a thin string, but French troops across the border, attracted by the noise, fortunately arrived in time to rescue him and the others.

Doctor Johnson remained in French Equatorial Africa only long

enough to let the dust settle. When the United Nations called for medical personnel, Titus Johnson and half a dozen others volunteered to go back in. For three weeks he labored around the clock in Matadi, where every store window was broken, every house had been looted, and bodies were lying criss-cross in the streets.

When some of the pressure subsided, he decided to return to his hospital in Kadanzi. But while passing by jeep through Luozi, a suburb of Leopoldville, he met the same group of soldiers who wanted to kill him before. "You're one of those who escaped!" screamed one, flourishing a bayonet.

Doctor Johnson talked fast. Speaking the native Lingali, he stalled his assailants. Several of the soldiers soon took the doctor's side. "He is a medicine man," they reasoned, "and should be preserved." Soon a fight started among the soldiers. During the scuffle, Doctor Johnson slipped away to his jeep.

When the soldiers noticed that their adversary had escaped, they followed him to Kadanzi. Doctor Johnson, instead of hiding, invited them in for coffee. The next morning Titus Johnson went to church. When he kneeled to pray, he noticed that sitting in the next pew was the soldier who twice had wanted to kill him. Since that day they've been friends.

The Christian Medical Society, like Topsy, never was born—it just grew. During the early 30's, Paul Kenneth Gieser, now a Wheaton, Illinois, ophthamologist, noticed that a fellow Northwestern University student, George Peterson, had a Bible on his desk. The two agreed to meet that Saturday noon at a near-by chapel. Soon others began to join them for weekly prayer meetings.

BY the time Gieser graduated, the group had increased to 14 or 15 members and was meeting once a month with another group from the University of Illinois Medical School on Chicago's west side. Some of the early CMS members were studying to become medical missionaries; most were simply interested in meeting with other Christian Medical students.

At the same time, similar groups were springing up or had sprung up spontaneously on other campuses, among them the Universities of Buffalo and Pennsylvania and Johns Hopkins in Baltimore—but no effort was made to consolidate the organization into any national group nor to hold any of the members once they had graduated.

Then in 1940, pneumonia and an ulcer forced Doctor Gieser's return to the States from the Orient, where he had been serving as a missionary doctor. Soon, with his prodding, a CMS graduate chapter began to meet once a month for dinner, often at the same time as gatherings of the American Medical Association or other professional groups that would normally draw doctors into town.

Organization followed interest. An office was rented in downtown Chicago for $45 a month. Storage space consisted of an unused closet donated rent-free by another company in the building. In 1951, Ray Knighton became part-time secretary to help him through school at Chicago Musical College.

TODAY he confines his singing to church choirs, since the job of executive director for the Christian Medical Society occupies all of his time plus the time of more than 20 other workers. CMS now owns its own office at 1122 Westgate, Oak Park, Illinois. They occupy its entire second floor and rent the first floor to the government for a social security office.

Two blocks away, on the other side of the commuter railroad tracks that run to Chicago's loop 10 miles distant, is a large, two-story warehouse bulging with medical supplies soon to be shipped by CMS through their Medical Assistance Program to missionaries throughout the world.

Five years ago such a program was non-existent. Then one morning the telephone rang in Ray Knighton's office. On the other end of the line was the manager of a large Eastern drug manufacturing firm. Though the two had never met, the manager knew of Ray and the work of CMS through a mutual friend. He stated his problem: "We have $75,000 worth of surplus drugs and we're willing to dump them where they'll do some good."

"Send the drugs right out," said Ray. He had some fair ideas of how he would use the drugs but no idea where to store them. When the drugs arrived the following week, he moved them into his office and moved himself out into the hall.

Fortunately the American Medical Association was having its annual convention about that time in Chicago. Visiting the convention hall, Ray Knighton invited all missionary doctors present to stop by the following day for a surprise. When they arrived at his office at nine the next morning, he announced they could have all the drugs they could carry away. Soon his office was empty.

Since that time, CMS has served as a vast clearing house for surplus medical supplies. Last year CMS sent 130 tons of drugs and equipment worth $1,158,510 to 500 foreign missionary doctors working in 64 countries.

"The drug firms like the way we operate," says Ray Knighton with perhaps just a touch of justifiable pride. "We have no ties; we're non-denominational. They often are quite willing to give away surplus and even non-surplus drugs, but when a request comes in they may have no way of checking its legitimacy. They know, however, that we work with only reputable physicians."

Occasionally people attempt to tap this stream of free medical supplies for less than ethical reasons. One request to a drug firm written on mission stationery looked legitimate enough. But when the company checked, they discovered the writer was a black marketeer whose "mission" equipment consisted only of a printing press. CMS officials recently discontinued shipments to one mission hospital in the Orient when they learned it accepted only wealthy people as patients.

ONE contributing drug firm commented: "It is our firm belief that it is organizations such as CMS which will be our first line of defense, short of war, in our battle against communism."

Besides passing out free supplies, CMS also is able to obtain other supplies at cut-rates for missionary buyers. Ordering in bulk, they have surgical equipment from West Germany shipped direct to users, saving almost 70 percent off list price. They also accumulate and distribute used but still usable equipment. Doctors buying a new fluoroscope or electrocardiograph will often donate their old model rather than trade it in.

CMS regularly sends used Audio-Digest tapes (tape-recorded medical lessons, each an hour in length) free

to their missionaries abroad. When more requests for tapes arrived than they could fill from supplies donated by their physician members, they asked the Audio-Digest manufacturers to put a message at the end of each tape saying: "Doctor, if you have no more need for your Audio-Digest tapes and would like to see them put to a good use, we suggest that you mail them to the Christian Medical Society for overseas work." Their supply of used tapes tripled.

"If you don't have a tape recorder, see us," says Ray Knighton to CMS members. "We might get one wholesale."

Perhaps even more important than equipment, CMS also dispenses advice. A few years ago, a doctor in Africa wrote asking for help in correcting a severe case of clubfoot on a new-born baby. He had seen clubfoot treated once, but did not know the procedure.

CMS contacted one of its board members, who was a pediatrician. By coincidence (some prefer to call it an act of God), the pediatrician shared an office with a former president of the American Orthopedic Association, the very person who had devised the cure the doctor in Africa had once witnessed.

Within 24 hours an air mail envelope describing treatment, suggesting equipment, and containing pages torn from textbooks was on its way to Africa. The result was a child with normal feet.

This vital information was relayed in a matter of days; soon, the time will be cut to hours. Last year, John Kullberg, a former high school electronics teacher and an amateur radio enthusiast, joined the staff of CMS as warehouse manager. When a wealthy Texan friend of both Kullberg and CMS learned of this, he donated a 1000-watt radio set to the organization. With it, Kullberg is setting up a network of missionary radio stations. Bush doctors will soon be able to radio instead of write when they need a quick shipment of supplies to combat some local epidemic. In addition, by means of the airwaves, they can be in almost instant contact with the best medical minds in the world.

This is just one instance of how CMS and its members are using modern communication methods to push back the barriers of the jungle. According to Doctor Blocksma: "In the full blast of modern jet progress, old methods of doing any kind of medical work, including Christian medical work, fail to survive."

Today most jungle missionary stations maintain contact with the outside world and each other by radio. When medical aid is needed, a quick call to the home base will bring a doctor winging over the jungle by plane in a matter of hours. The one-engined, lightweight plane can cover in an hour's time a distance that used to take eight or nine days by canoe and foot.

Missionaries give pre-tuned radios to natives in many parts of the world. Because the radios need only receive one frequency, they can be manufactured quite cheaply. Both spiritual and hygienic messages are then broadcast at regular intervals each day.

One CMS member in Nigeria, Dr. Douglas Hirsch, spends each Sunday traveling across the country preaching the Gospel in a station wagon equipped with an amplifying system. In Ecuador, one missionary group converted a small bus into a portable clinic. Most standard mobile units cost more than the average missionary making $100 a month can afford, so they obtain plans and improvise their own.

Missionaries are often called upon to do engineering as well as medical work. The absence of an efficient and sanitary water system can often stymie the best hospital operation. Cooperating with CMS when such problems occur is DATA Incorporated, a new organization based in Palo Alto, California, which serves as a consulting service for missionaries. Eventually DATA Incorporated hopes to send out engineers on a short-term basis much as CMS now sends out doctors.

CMS maintains a Brother Physicians League, in which doctors at home correspond with mission doctors, offering encouragement and current medical information. Members of CMS also entertain foreign doctors studying in this country, both at receptions and in their own homes. Last winter in Buffalo, New York, CMS members sponsored an eight-week refresher course for foreign doctors attempting to pass ex-

THUMB UNIT REPLACES NEEDLE IN SMALLPOX VACCINATION

A PLASTIC ring-like device with nine tiny points has been introduced to make smallpox vaccination faster and less painful. A doctor squeezes vaccine onto the points, slips the unit over his thumb, and presses it against the patient's arm.

The thumb unit scarifier, as it is technically designated, would replace the conventional needle and eliminate aiming of the needle. Because the points do not penetrate into the deep skin, there is almost no pain.

Developers of the device claim it does away with "needle fear" and struggling of infants and children, results in a cosmetically superior and uniformly smaller scar, and produces a higher percentage of "takes" than with a needle—about 98 percent as compared to 93 percent.

The vaccinator comes in a sterile plastic bag, is thrown away after a single use. A vaccination can be performed in two or three seconds, making this new method useful in mass vaccinations in health clinics and during epidemics.

The new technique was introduced at an American Academy of Pediatrics meeting by Dr. Harvey Kravitz, clinical assistant professor of pediatrics on the staff of the University of Illinois Medical School and St. Francis Hospital, Evanston, Illinois.

aminations which would entitle them to certification in this country. A CMS family in the Midwest regularly invited to their home a medical student from Afghanistan, a country known for its anti-Christian and pro-communist leanings. He was astounded by the warmth of their family relationship. American movies had led him to believe that every American home was involved in a romantic triangle.

Medical scholarships are also handled by CMS. Says Ray Knighton: "Last year we heard of some money in the will of a California widow earmarked for training foreign missionaries. But the people in charge of the estate didn't know how to best utilize the money. We took charge and recommended 26 students anticipating medical mission service. They were given more than $20,000 in scholarship aid."

Some 75 CMS chapters exist in medical schools both in the United States and Canada. Student members pay nominal membership fees of $1 a year and meet once or twice a week for discussions, Bible studies, or service work. Included in this latter category are projects similar to the one sponsored by the CMS chapter at the University of Illinois medical school.

Each Friday night during the school year, Illinois chapter members visit the Pacific Garden Mission on South State Street in the heart of Chicago's skid row district. In a back room on the second floor of the mission they hold a clinic for humanity's castoffs. Most of their patients are treated for their ailments on the spot; about 25 percent are referred and sent to nearby public hospitals.

Northwestern University CMS members hold a similar clinic on Wednesday night, and two other nights a week CMS members of the University of Illinois dental school extract and fill teeth.

Mission clinics were originated at the Central Gospel Hall in Philadelphia by the CMS chapter of the University of Pennsylvania. Five medical schools now alternate serving three mission clinics in the Philadelphia area. Other CMS chapters also operate clinics in Minneapolis, Denver, Kansas City, Los Angeles, Winnipeg, Buffalo, Cleveland, and Washington, D. C.

"It provides good training for the students," says Harry G. Saulnier, superintendent of Chicago's Pacific Garden Mission. "Not only do they get good practical medical experience, but they also learn about the saving of men's souls—which is one of the main reasons for medical missionaries anyway."

According to Dr. C. Everett Koop, professor of surgery at the University of Pennsylvania's medical school: "Many Christians unfortunately think of Christian medicine as a project organized by a missionary society rather than as medicine practiced by Christians. Medicine is one of the original works of mercy. Whether it be practiced under government, foreign agency, or missions it is an expression of Christian life."

The most current project of CMS is "Operation Doctor," in cooperation with the Congo Protestant Relief Agency and with the approval of the American Medical Association. The AMA has long recognized the positive values of CMS and at its clinic meeting in Dallas in the fall of 1959 approved a resolution to make it easier for missionary doctors to obtain post-graduate training both at home and abroad.

Operation Doctor hopes to recruit 100 additional doctors to go to the Congo for periods of one, two or three years. More long-range plans include the recruiting of more doctors for short-term service at missionary stations.

Last August, the AMA held a meeting with responsible church leaders and citizens to discuss the international health program of missionary doctors. Some of the participants included Knighton; Bishop Fulton J. Sheen, national director of the Society for Propagation of the Faith, and Frederick G. Scovel, secretary of the Christian Medical Council for Overseas Work, National Council of the Churches of Christ.

As a result of this meeting, and meetings with other medical missionary organizations, the AMA established a Department of International Health under the supervision of Franklin D. Yoder, M.D., director of the AMA's Division of Environmental Medicine.

Part of the department's program is to secure medical textbooks and films for missionary members, and to encourage the development of foreign fellowship programs for medical students patterned after the Smith, Kline & French venture.

At the AMA annual meeting in New York in June, the Department will cooperate to provide a portion of a program stressing missionary efforts in medicine at the Conference of Presidents and Other Officers of State and Medical Associations.

Perhaps at no other time in the history of the world has the necessity for organizations such as the Christian Medical Society been so apparent. A missionary on leave from Japan during World War II once said: "If we had sent a tenth as many missionaries to Japan as we are now sending soldiers, and if we had spent only one percent of the cost of that war to support missions, then in all likelihood there would have been no war." Though spoken almost 20 years ago, those words might well apply today. END

If You Ever Use Aspirin

(*Continued from page 43*)

2. Never take an aspirin to reduce fever without first consulting your doctor. If you do, there is danger that you will mask symptoms and clues to your disease.

3. Be sure you take aspirin with a full glass of water and not on an empty stomach. Otherwise you're liable to irritate your stomach, bring on nausea, and even vomiting.

4. Aspirin deteriorates in the bottle with time and the more it does, the more likely you'll suffer reactions. So don't buy more than a two- or three-month supply. When the aspirin bottle smells of vinegar on opening or the tablets fall apart between your fingers, throw it out.

5. Never take an aspirin if you have a stomach ulcer. Aspirin's weak acidity can greatly irritate an ulcer and even cause it to bleed.

6. Allergic reactions to aspirin are rare, but occur most frequently in persons who have asthma. Such reactions can be violent. In susceptible persons, two aspirins can cause unconsciousness.

Aspirin's greatest danger is its familiarity. There is probably no medicine cabinet in the country that doesn't have at least one bottle or tin. There is probably no one who has never taken an aspirin.

Aspirin's blackest mark is its appreciable and consistent death toll among curious crawlers. According

Interesting Facts About the History of Aspirin

ASPIRIN belongs to the family of drugs known as salicylates, which ancient man concocted thousands of years ago from willow bark. Hippocrates advised willow bark for pain relief. Chemically, aspirin is acetylsalicylic acid, $C_9H_8O_4$, a snowy white powder that is usually pressed into five-grain tablets.

Acetylsalicylic acid was first made in 1853 by Charles Frederic von Gerhardt, a French chemist. However, its pain-killing powers weren't discovered until 1898, when Felix Hoffmann, a young German chemist, used it to relieve his father's rheumatoid arthritis pains. Young Hoffmann found it mentioned in dusty chemical books, made some, then tried it on animals, himself, and the elder Hoffmann. It worked.

He then reported his discovery to his superiors at the Frederich Bayer Company in Duesseldorf. After extensive trials, Bayer patented it. Hoffmann gave it the short name of aspirin because its raw material, which came from spirea plants, was called spirin.

The first aspirins were sold in the U.S. in 1915. But when Bayer property here was seized by the government in World War I, other drug companies made acetylsalicylic acid and called it aspirin. In a famous decision of 1921, Judge Learned Hand ruled that the name aspirin had become so well known and universally used that no one company could claim it. Aspirin has been the generic name ever since.

Aspirin has broken all the rules of drug marketing. Usually, new medicines have a popularity for only a few years, then are replaced by newer and better drugs. Not aspirin—its sales have increased every year since 1899.

to the Metropolitan Life Insurance Company, more than half of the deaths from aspirin occur among children between ages one and two.

In a study of 13,000 accidental poisonings (*Journal of the American Medical Association*, November 20, 1959) among persons under 20, Dr. Harold Jacobziner of the New York City Department of Health found that "aspirin accounted for 2061 cases, 16 percent of the total. The flavored aspirin preparations for babies were most frequently incriminated, chiefly because of their common use in the home."

An editorial in the December 1960 issue of the *Journal of the American Medical Association* concerning medicine cabinets stated: "A periodic inventory is advisable for 'pack rat' accumulations, and a good bonfire. Above all, it is imperative to keep drug samples from children."

Most aspirin bottles bear the warning: KEEP OUT OF THE REACH OF CHILDREN. Heed it. Also, when you give brightly-colored and pleasantly-flavored baby aspirin (or any drug for that matter) to children, *don't* refer to it as candy. Call it medicine.

In addition, Dr. Alfred J. R. Koumans of Norwalk Hospital, Connecticut, suggests that parents take their own pills in private. Because children love to imitate, many poisonings have occurred when youngsters fed pills to each other or themselves "like mommy and daddy do."

If you find that your child has swallowed a bottle of aspirin tablets, don't panic. Aspirin is not an instant poison. Call your doctor immediately. If your child is conscious, the doctor will probably advise you to induce vomiting.

The best way to do this is to place your finger or the blunt part of a spoon at the back of the child's throat or give him two tablespoons of salt in a glass of warm water. When retching begins, hold him face down, with his head lower than his hips. This will prevent the vomitus from being inhaled into his lungs.

As in all poisons, the best cure is prevention.

Aspirin is a wonderful drug, just as green apples are wonderful. Misuse of either can cause misery. END

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Spots Before Your Eyes

by WARD L. MOULD, M.D.

ONE OF THE common complaints of people visiting an eye physician is that they see "spots before their eyes." Most of them are greatly alarmed by their experience. Fortunately, many of these people do not have serious eye conditions.

When a person sees a "spot" before his eyes it means that an opaque object inside the eye is interfering with the proper transmission of light. This object's shadow is cast on the retina (the inner nerve coat of the eye which receives the image focused by the lens and changes it into nervous impulses which are transmitted to the brain). In most cases, "spots" are due to opacities that occur normally, but in other instances they are symptoms of an abnormality.

A large part of the space within the eyeball is filled with a semifluid substance called the vitreous. At one point in its development, some of the blood vessels within the eye shrivel up and disappear. When this occurs, tiny fragments break off and drift into the vitreous, where they can move about.

Frequently these opaque islets of tissue become situated in a portion of the eye where they cannot be seen, and may remain there indefinitely. Or they may move into an area of the vitreous where they will be visible. Thus one day a person has what he considers to be a perfectly normal eye, but the next he may see a "spot before his eyes."

This type of spot has certain special characteristics:

1. It is not present at all times.

2. It is never in the line of vision. It is always off to one side or above or below the line of vision.

3. It is seen when looking at objects which provide a bright background—the ceiling of a room, as seen while lying in bed; the sky, as a housewife might see it when she hangs out her laundry; or a spot may dance about while a person reads a newspaper.

4. The spot will move with the eye, but does not stop the instant the eye does. When the eye moves, currents are set up in the vitreous in which the tissue floats. When the eye motion stops, the islet of tissue will be carried along in the current for a fraction of a second. If the eye is held in one place, the spot may seem to sink down, as though by gravity, and disappear.

The appearance of the spot will be governed by the shape of the opacity floating in the eye. Some appear as a round dot; others as a hair, which may be straight or curled. Such spots can assume a vast number of shapes.

No other symptoms are associated with this condition—only the annoyance of seeing a moving black speck which is not supposed to be there. Fortunately, the speck will not always be seen—it will be seen only under special circumstances.

When the spots are not of serious consequence, the eye physician can reassure the patient. If the condition clears, as sometimes happens, it does not mean that the opacity has dissolved—it has only retreated to a portion of the eye where it is no longer visible. Usually, once spots appear, the condition is permanent. However, they are noticed only at times and one becomes accustomed to them, so they prove less distressing with the passage of time.

In certain abnormal conditions, spots are likely to appear before the eyes. Among the more common of these conditions are hemorrhage within the eye, detachment of the retina, and inflammation of structures inside the eye. In each of these, the symptoms are rather typical.

When a blood vessel breaks within the eye, there is a sudden outpouring of blood. The afflicted individual often states he felt as though a curtain had been drawn in front of his eye. Objects often appear as though viewed through lace.

When the retina becomes detached, the patient often sees spots, along with flashes of light. He sees many spots, and usually they are present all the time. Again, he may see a "curtain" before the eye, but at first over only a part of his field of vision. Or he doesn't see objects in a certain direction.

Inflammation of the interior parts of the eye is often accompanied by a clouding of vision. Objects appear as though seen through a haze.

With hemorrhage, detachment of the retina, or inflammation, the outward appearance of the eye rarely denotes that an abnormality exists, and ordinarily there is no pain. However, all of these conditions are definitely abnormal and when symptoms occur that suggest their presence, the sufferer should see a physician promptly. If treatment is delayed, serious and irreparable damage to the eyes might result. If you do not know an eye physician (ophthalmologist), your family physician will advise you. END

Planning Your Own Security

(Continued from page 29)

Doctor Murphy had long before put pencil to paper and calculated just what his combined resources would yield. He knew, too, how much supplementary income he would have to produce in his retirement to balance his budget. And so he set about the happy prospect of doing only the things he liked best, and making the scientific contributions closest to his heart—and at the same time producing without strain the necessary supplement to his retirement income.

"I don't think I'd need or want a full-time job right now if it was offered me," he said. "I am free to come and go as I please, to pick up and travel wherever I want to. Grace and I live quite comfortably on our Social Security, my pension, our various savings and investments, plus the income from our writing and my lecturing. As a matter of fact, it's ideal! We're quite happy."

In 1959, the U.S. Navy's Operation Deep Freeze called on Doctor Murphy to join an expedition to the Antarctic. He was to go as chief zoologist for the National Science Foundation. There was, of course, a rigorous physical examination (it lasted four days) for all participants in the deep freeze expedition. Some may have doubted that Doctor Murphy, then 72, could pass the test. He did—with flying colors.

Then came the financial question. How much would Doctor Murphy have to be paid? The question answered itself. Doctor Murphy didn't bother to apply for a salary: "I just drew my travel expenses," he recalled. "I didn't need the rest." (And he could have kept it, for at 72, the additional earnings wouldn't have cut into his Social Security payments.)

Doctor Murphy found himself as creatively busy in retirement as he ever had been during his younger years. Retirement to him was an *active*, not a *passive* state. His days were filled with research, writing, lecturing, and consultation. He had the time now to spend on private research projects, scientific probings which he had always wanted to make but never could quite fit into the planned programs and expeditions of the Museum.

One day the National Research Council would call on him for consultation, another day the Pacific Science Board, then again the Cold Spring Harbor Laboratory, and sometimes the American Geographical Society.

He loved being busy, and why not? The whole idea of conservation was to prevent resources from being exhausted. And Doctor Murphy had conserved his human resources. They were not exhausted; they continued to yield. And so this man in his 70's was still of great value to the world and great value to himself.

By contrast he recalled a visit to New Zealand, where he observed groups of people being supported in their retirement by government handouts. "I remember being very impressed with these people, but in a negative way," he said, "because although the government was really supporting them, they weren't really living.

"I never saw such lack of enthusiasm, lack of drive. These people were just sitting around and loafing, wasting their time. I suppose that sort of thing is all right for a month or two, but certainly not when you've got years ahead of you to live."

"Live while you're alive" might be the nugget of Doctor Murphy's philosophy. It may be, in the final evaluation of his scientific work, that some of his finest contributions will have been made after his retirement. He never could accept the notion of a human being simply putting on the brakes and stopping, like a parked car. One had to be moving, growing, working, earning, and seeking new adventure as long as there was life and breath within him. As a grandfather in his 70's, Doctor Murphy was eagerly looking forward to the new experience of becoming a great-grandfather.

"Want to know what I'm going to do when I become a great-grandfather? Take up fox-hunting," he said with a twinkle in his eye. "In

the section of Long Island where I live we still have fox hunts, and I can remember when I was a boy the Master of the Hounds was a grandfather named Murray Peters. People used to say, 'Look, there goes Peters, and he's a grandfather too!' Well, I'm *really* going to give them something to shout about. They'll be saying, 'Look, there goes Murphy. And he's a great-grandfather!' "

As Doctor Murphy's story clearly indicates, planning one's own security in later years is primarily an individual matter. The human being is endowed by God with remarkable faculties for looking out for himself. It is only when he allows those faculties to atrophy through disuse that the paralysis of helplessness begins slowly but inexorably to creep upon him.

Such atrophy can commence with the individual himself: We all know individuals whom we regard as shiftless, irresponsible, or, in the less elegant but more expressive vernacular, as loafers and free-loaders.

We try our best to help these people. Modern medicine has come to look upon such qualities as forms of neurosis, symptoms of mental ill health. One of the psychiatrists' basic objectives is to help the individual to stand on his own two feet, for the modern science of mental health recognizes that independence and self-reliance are integral to the wholeness of a person.

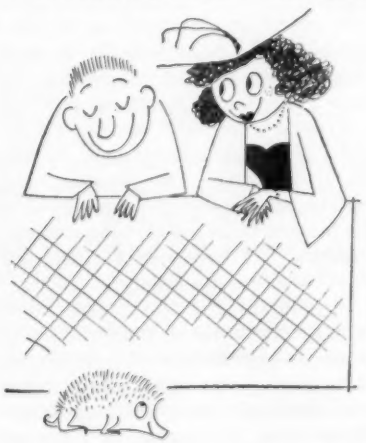
Parents, in their total love for their children, try to teach them and to help them early in life to use the talents with which nature has endowed them for taking care of themselves. When parents prolong the period of dependency and tend to do everything for their children, so that the children are trussed up in the apron strings of helplessness, we say that such children are "spoiled." Their parents, not by the true love which strengthens but by the bogus love which pampers and destroys, have deprived such children of the basic power of life: the power of self-preservation.

When societies or governments similarly strip the individual of self-reliance and woo him into dependency they likewise, either out of bogus or misguided love (or for political exploitation), strip the individual of his strength and worth.

The poet Robert Browning wrote in the first stanza of "Rabbi Ben Ezra:"

Our times are in His hand
Who saith "A whole I planned,
Youth shows but half; trust God;
see all, nor be afraid:"

"A whole I planned." God indeed



TON SMITS

SHOULDER DISLOCATION

If a person falls on his outstretched hand, a fracture might result somewhere along his arm or collarbone. But if all of the bones withstand the force, sometimes a shoulder dislocation occurs. Occasionally the dislocation is associated with a fracture.

The shoulder joint is formed by the ball-like upper end of the arm bone and the socket of the shoulder blade. The joint permits remarkably free motion in many directions, but is also rather unstable and dislocation is readily possible.

When the fall on the outstretched hand occurs, the upper end of the arm bone tears through the connective tissue covering the ball and socket and is dislocated from the socket. While the patient almost always knows that the bone is out of place or broken, he usually cannot tell whether there is also a fracture through the arm bone or whether there is a chip fracture near the upper end.

Too often a would-be helper tries to get the bone back into place by pulling on the arm. There are two dangers in this. First, a fracture may be present and the manipulation may cause great harm. The nerves and the large blood vessel to the upper arm lie in close relation to the joint and may be damaged.

The second danger is that the tear in the connective tissue may be enlarged by the manipulation. Connective tissue heals slowly, perhaps incompletely. A result may be a shoulder that dislocates very easily later. Some people are permanently disabled in this way, and surgery is not always completely successful.

What to Do

Apply an arm sling and send the patient for an x-ray and medical attention. The arm sling should be adjusted so that it supports the forearm and hand but does not exert upward pressure at the elbow. This upward pressure would drive the arm bone and possibly a broken end against the soft tissue.

Clip and retain on file card for future reference

planned life as a whole—and so must we as individuals. In youth we plan for college; in college for young adulthood; in young adulthood for middle age; and in middle age, we ought to plan—and diligently—for old age.

"When we get out in our automobiles, we don't blithely set forth on a trip to nowhere. We know (or should know) where we are going. And in life we are certainly heading inexorably toward old age. With the intelligence God gave us, we should plan for it."

"Many of the problems you face in later years can be anticipated," comments State Senator Thomas C. Desmond, chairman emeritus of the New York State Legislative Committee on Problems of the Aging. "Some of the problems of later life can be prevented early in life. And it is rarely that you are too old to begin to overcome them. The way to plan for a happy old age is to plan for tomorrow's happiness today."

A good leader takes a little more than his share of the blame; a little less than his share of the credit.

—Arnold H. Glasgow

Psychiatrist Smiley Blanton, who at the age of 76 was still vitally active in his profession and equally active in his writings on the arts of living, declared in one of these:

"Your later years can be very pleasant and productive ones if—and it's a big *if*—you start preparing for them soon enough. Many people adopt an ostrich attitude: They don't look ahead because they are afraid of what they might see if they do. Others have a fatalistic or nothing-can-be-done attitude. Both attitudes are a mistake. Much can be done, much *must* be done, and the time to do it is in the middle years."

Old age can indeed be a frightening, confusing period if we fail to prepare for it—even as high school could be, or college, or one's first job, or marriage. All these steps in life must be prepared for, and so must old age. As the Rev. Charles M. Crowe, of Wilmette, Illinois, comments, "The best way to outwit old age is not to be afraid of it, and the best way to do that is to get ready for it. The time—*now*." END

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"Until All Have Been Attended"

(*Continued from page 55*)

The Cook family has two pets, Buffy, a fluffy Pomeranian, and J. B., a Labrador retriever. The doctor also has three bird dogs which he keeps in the country.

Doctor Cook is an avid Sunday morning golfer when his practice permits, and shoots, he says, in the low 80's. His opponents say he shoots just well enough to win. He used to play bridge, and his reason for giving it up is characteristic: "I used to lie awake at night playing every hand over again."

He lives by what might be termed a "throw-the-switch" philosophy. When a problem becomes burdensome even after long and careful thought, he has the capacity for completely erasing it from his mind while he considers another.

"When I return to the first problem," he says, "many of the facts and factors have fallen neatly into place and point the way to a clear, logical answer."

On a typical day, Doctor Cook is up at seven a.m.—roused by Mrs. Cook with his "first thing" cup of coffee in her hand. Breakfast with the family (grits and cheese a prime feature) follows. School in Marianna starts at eight, and the children are off to classes by 7:30. After a glance at the morning paper, the doctor leaves a few minutes before eight for his morning rounds at Jackson Hospital.

From 10:30 to 12:30, he sees patients in his small, neat office, where he is assisted by Mrs. Virginia Hamilton, the only nurse he's ever had, and Mrs. Billie Carlton, who has been his laboratory technician and secretary for seven years.

Lunch may be 15 minutes on a drugstore stool or a 90-minute Rotary luncheon, depending on the demands of his patients. Then it's back to the office to see more patients until 5:30, followed by hospital and house calls until seven or eight.

Several phone calls are usually waiting for Doctor Cook when he finally gets home. He works "until all have been attended." Unless emergencies or community activities keep him out later, he gets to bed at 10 or 10:30. "I get ornery when I don't get enough sleep," he says.

Though his routine seems hectic to outside observers, it doesn't bother Doctor Cook, who compares his 60-hour work week to that of a shopkeeper, who after his 40 hours in the store, puts in another 20 on bookwork.

AND besides, Jim Cook would much rather talk about the hunting and fishing opportunities almost in his back yard: "Just about the best hunting in the world if you like to shoot quail. Some days in the winter I get up at six o'clock and get in an hour or so of hunting before going to the hospital. The quail are only 10 minutes from the house."

He also likes to point out that the family's home on Sixth Avenue is only two blocks from his office, three from the hospital, and four from the elementary and high schools. "At night," he adds, "I can get to the hospital for an emergency call in three minutes."

It is all to Dr. Jim Cook—as he says—"fun." But it is also something more: the general practice not only of medicine but of living life to the fullest, doing as much as possible for others. END

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TIPS *for your home and family*

HOW TO SELECT A SUMMER CAMP FOR YOUR YOUNGSTER . . . SAFETY RULES FOR KITE FLYING

SENDING YOUR CHILD TO CAMP THIS SUMMER? If so, let's take a look at what a good camp should give your youngster.

- Camping is fun — the boy should return happier than when he left.
- He will learn to play and work with others and to do things for himself. At the same time, he gets away from parents and home — the vacation should do both parents and child good.
- He'll probably learn more about nature. He'll have many adventures and learn new skills in out-of-doors living. He may also get a new concept of democracy, since group living is a necessity.
- He'll probably develop new interests and values, and make new friends.
- If he's a city child, the new outdoor experiences will do him good. And rural youngsters will have fun in new social situations.

HERE ARE SOME CAMPING SUGGESTIONS AND INFORMATION. Decide what kind of camp will suit your youngster and how much you can pay. And then check these camp standards suggested by the American Camping Association:

OBJECTIVES OF CAMPING. The camp should emphasize out-of-doors living, recreation, social adjustment, group living, and education. To assure this type of experience, each camp should be led by competent personnel. Standards should be high concerning health and sanitation, safety, and program.

THE PROGRAM should help youngsters develop new outdoor skills and teach them new experiences of camp life. The youngsters must learn how to live with their new friends, must learn teamwork, and they should have fun learning these new experiences. Although each day should be well planned, each youngster should also have time for his own leisure and to spend a few moments a day as he wishes.

ALTHOUGH SPORTS are necessary and important — swimming, archery, boating and canoeing, games and hikes, to name a few — a good camp will also schedule many group participations, including dramatic productions, musical events, and other special ceremonies and activities.

YOUR CHILD should be with a group of children in his own age bracket and should always have an adult counselor to turn to.

FACILITIES AND EQUIPMENT. Needless to say, all camp buildings should be safe, and the equipment in good operating condition. Youngsters should sleep in clean beds, and the heads of the beds should be at least six feet apart.

THE CAMP SITE should also be free from unnecessary hazards, and if possible, be located in an area of natural beauty. The camp should also be away from undesirable areas — garbage dumps, dangerous swamps.

(over)

TIPS for your home and family (continued)

ALL MEMBERS OF THE STAFF should be adequately trained for their jobs, in good health, emotionally secure, interested in working with youngsters, and people who enjoy working outdoors.

THE CAMP DIRECTOR should be experienced in organizing a summer camp, mature in judgment, skilled in group work, able to administer and to work in harmony with his staff, a college or university graduate, or have equivalent educational background.

CAMP OFFICIALS SHOULD have accurate financial statements, adequate insurance, registration cards for each camper providing the name, address, and phone number of the camper's next of kin, all the necessary permits, proper food records and inventories, and written consent of parents for camper's participation in certain activities.

GIVE THE CAMP DIRECTOR all the necessary information about your child. If the youngster has particular ailments or disabilities that may prevent him from participating in certain activities and games, the director should know about them. The more the director knows about your child, the more the official will be able to provide for the youngster.

HEALTH AND SANITATION. Health supervision of all campers is a must. A registered nurse or physician should be on the staff or on hand at all times. A Red Cross water safety instructor should direct water activities. The camp should have a well-equipped infirmary. Isolated quarters should also be provided.

ALL CAMPERS AND STAFF MEMBERS should have a physical examination before they go to camp. Both groups should also have preventive inoculations recommended by public health authorities.

LAVATORY FACILITIES should be sanitary and adequate, and there should be an effective plan for control of insects, rodents, and poisonous weeds.

REMEMBER: Select a camp wisely. Provide safe and healthy living conditions for the youngster. You'll be satisfied and so will the child.

KITES ARE A LOT OF FUN — but they can be dangerous. Follow this advice:

- NEVER fly a kite in the rain. Lightning may strike the kite, the string, or you.
- DON'T fly a kite that has metal in the frame or tail. And stay away from tinsel-string, wire, or twine that has any metal in it.
- BE EXTREMELY CAREFUL around electric power lines, and avoid radio and television aerials.
- NEVER pull on a string or climb a power pole to loosen a snagged kite. You may get shocked or you may tumble off the pole.
- LOOK WHERE YOU RUN. Fly your kite in an open field and don't run across streets or highways.
- YOU CAN USUALLY BUY A KITE for 10 cents, and string costs a few pennies more. If your kite or string gets stuck on a roof, tree, power or telephone wire, forget about it and have dad buy a new one.

Dennis Orphan

Progressive Patient Care

(*Continued from page 59*)

considered the best of care then," said Mrs. Dabrovalsky. "When I came back this time, I went into the intensive care zone. It was very comforting because I was so sick and a nurse was beside me all the time, just like having my own private duty nurse. Intermediate was good, too. That was more like the hospital was when I was here before.

"The ambulatory zone is wonderful. I have opportunity to exercise and see how much strength I have and how I am getting along. The food is very good. And I can entertain or be entertained here, just like being in my home only much better. I'm so satisfied and happy that I almost hate to think of leaving."

PPC is the brain-child of Edward J. Thoms, 41-year-old administrator of Memorial Hospital in Manchester, Connecticut. Thoms installed PPC in Manchester Memorial in April 1957. He points out that under the plan a doctor may admit his patients directly to the intensive care unit without going through the admitting office, long a source of irritation to patients. Moreover, no patient may be moved from one unit to another without specific orders from the patient's doctor.

Grant patterned its PPC program after the Manchester plan. Administrators, physicians, and the assistant director of nursing, Mrs. Dorotha Edgeworth, journeyed to Manchester, where they studied PPC in detail.

"We did not rush into this thing," explains Executive Director Bailey. "PPC first came into discussion with our administration staff in the summer of 1958. It was brought to our attention through the prominence given the program at Manchester Memorial in professional journals and in several articles in popular magazines.

"Because our hospital was faced with the best possible utilization of available nursing personnel and the question of rendering adequate service at as reasonable a cost as possible, we explored the possibilities of PPC. We studied the plan in operation at Manchester Memorial and other hospitals."

Some of the questions needing answers were:

1. Would PPC provide better patient care?
2. Could PPC be implemented in an old plant?
3. How many of the five steps in the plan could we incorporate?
4. Would the medical staff accept the program and agree to conform to the necessary controls?
5. Would the patients accept the program?
6. What would be the attitude of the third party payor, especially Blue Cross?

"Our studies convinced us we would have no difficulties in implementing a program that would do everything we had hoped it would," concluded Bailey. "We learned, among other things, that the most important single factor in the acceptance and ultimate success of PPC is properly educating your medical staff. We spent a year doing this and even then did not go into PPC until the staff voted almost unanimously to adopt the plan."

A study of the hospital's plant structure and physical layout was made to determine which areas lent themselves most readily for revamping. Meantime, a study of the hospital census at various times indicated 16 beds would meet the requirements for ambulatory patients and 18 beds, arranged in three six-bed units, would provide ample beds for the critically ill patients in the intensive care zone.

It became obvious that the intensive care zone could be housed in the oldest portion of the hospital—the 1897 wing. There, two eight-bed wards could be revamped without too much expense into two six-bed units. A third six-bed unit could be set up, with two rooms for isolation of patients to care for noisy or contagious cases. (*Turn page*)

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The newer wing of the hospital provided an area for ambulatory care. Ten single rooms and three two-bed rooms might be incorporated with the unit as part of one 16-bed ambulatory zone. Two rooms could be made into one to serve as a patient lounge, cafeteria, and television room. An additional room on the floor was available for a library. Glass doors installed at the end of the corridor would separate the ambulatory zone from the balance of the floor, designated for general care.

Since intermediate care is not unlike normal care in a general hospital there was no problem in creating an intermediate zone. It merely meant leaving those areas not taken over by the other two zones unchanged, except for some necessary modernization. In fact, modernizing the hospital took the lion's share of the $54,000 set aside by Grant to cover expenses in adapting the hospital for PPC. It was felt, however, that the expenses incurred in establishing the program were minor.

PPC has been in effect in Grant Hospital for almost two years now and, with that experience tucked under their belts, there are few changes the staff feels would be made if the program were to be started anew.

"We would change no part of the basic program," says Director Bailey. "We do feel, however, that were space available, it would be wise to include a section for 'continuing care' in the general plan. Even with a hospital of 250 beds, there are patients who belong in this category which may include cases of burns, orthopedic cases, individuals who will need much nursing care, and whose predictable stay in the hospital is over 30 days."

Plans already under way to expand PPC to include long-term care are part of the pilot research study program into PPC by the U. S. Public Health Service. In a recent announcement the PHS named Grant Hospital as one of two hospitals in the country awarded grants to undertake studies in PPC.

"More than 200 observers from hospitals in 19 states, Australia, and Canada have visited the hospital to study and inspect a successful program of PPC," says Bailey. "The medical staff, directors, and administration feel that PPC represents the most promising hope that exists today for hospitals to improve the level of patient care, hold the line on costs, and increase the effectiveness of scarce professional personnel."

What do others think of the PPC program?

Norman Brady, director of Presbyterian-St. Luke's 900-bed hospital in Chicago, says, "We have a number of types of patient care in our teaching and research hospitals around the country, although many are not identified as Progressive Patient Care.

"Here at Presbyterian-St. Luke's we have had an intensive patient therapy unit four years now for the postoperative period. We have had general medical and surgical floors for general and acute care for fully as long a period. A little over six months ago we installed a medical observation unit which serves a real need for the patient not really real sick but complaining and in need of

WHAT IS AN EMERGENCY?

SEVEN GUIDES as to what constitutes an actual medical emergency should be kept in mind when you call a physician for someone in distress, says the Monroe County (New York) Medical Society. The situation is a true emergency if there is:

1. Bleeding that won't stop.
2. Any interference with breathing.
3. A convulsive seizure.
4. Acute pain.
5. Sudden unconsciousness without quick recovery.
6. High temperature with no apparent reason.
7. Severe coughing.

When you talk to a doctor on the telephone, advises the Society, give him as clearly as you can all essential information about the patient—pain, bleeding, temperature, and other pertinent facts about his condition. Be ready to take instructions on what to do until the doctor arrives to handle the emergency.

observation and tests to determine his illness."

Brady asserts that hospitals, by and large, are trying to meet the patient's individual needs in medical care. He believes the main interest in any program should be governed by whether it is for the good of the patient.

"If in our patient care," says Brady, "we have been able to reduce costs to the patient, all well and good. We're happy to do that. But our major concern is adequate care for the patient and we never lose sight of that."

Edward Thompson, M.D., chief of Intramural Research Activity of the United States Public Health Service, and his staff made a comprehensive two-year study of PPC. Doctor Thompson says the study proves that patients are receiving better hospital care where PPC is functioning. He believes that placing patients in zones of medical and nursing needs may develop a new approach to prepayment hospital plans. He sees the possibility of policyholders having the option of paying premiums for all three zones of hospital care, two zones, or one. The uncovered costs might be paid by the patient as a sort of deductible feature.

The associate director of the American Hospital Association, Madison Brown, M.D., says his organization is taking a wait-and-see attitude in regard to PPC. He said nothing had been seen yet to convince the Association that the physical aspects of hospitals should be changed, such as building the so-called "hospital-in-the-round," in order to implement the concept of PPC successfully.

"The type of exploration into hospital patient care now being carried on is important," concludes Doctor Brown, "but further study is necessary before we can give any blanket endorsement to PPC."

Meanwhile, the 79 individual Blue Cross Plans across the country say they are particularly interested in anything that will help reduce patient costs in hospitals while preserving the usual high quality of medical care. It is to be presumed Blue Cross is watching the spread of PPC in the nation's hospitals as a bold exploration. There are others, like Blue Cross, who prefer to withhold any definite appraisal of the plan until a greater implementation of the program in a larger number of hospitals may be studied. END

Checklist for Choosing a Baby Sitter

WHEN you hire a baby sitter, do you check to see if she's experienced, reliable, and of good moral character? Are you sure she'll be able to handle the emergencies that sometimes confront baby sitters—situations that may range from an attempted burglary to electric power failure to baby's sudden illness?

"The well-intentioned but untrained baby sitter is a greater threat to baby than her irresponsible teen-age cousin who uses baby sitting as a front for unchaperoned parties."

This warning comes from Ernest G. Osborne, Ph.D., professor of education in the Home and Family Life Department at Columbia University. Doctor Osborne, who is also chairman of the National Baby Care Council, offers this 10-point checklist to rate your baby sitter:

1. *Does your baby sitter like children?* If she doesn't, she won't be concerned with the comfort and welfare of your baby. Watch her reaction when you introduce her to your child.

2. *Is she experienced and reliable?* She must be both to care properly for your baby and be capable of handling emergency situations.

3. *Is she sufficiently mature?* A baby sitter should be old enough to be trusted with your child and to remain awake and alert when her hours on duty run late into the night.

4. *Does she hear and see well?* You're taking a risk if she has any difficulty with either. If she's hard of hearing, for example, she may not be able to hear your baby's cry above the sound of the TV set.

5. *Is she in the habit of inviting teen-age friends to visit with her?* Having company on the job will only divert her attention from her prime responsibility, the care and safety of your child.

6. *Does she know how to use a telephone properly?* Be sure she knows how to get in touch with local police and fire departments.

7. *Does she know how to lift and hold your baby?* In lifting an infant, proper support must be given the back and neck. Babies have an instinctive fear of falling, so a firm grip is necessary.

8. *Does she know how to feed a baby?* Your baby sitter should know how to warm the formula; how to test it so it isn't too hot; how to feed and burp a baby.

9. *Does she know how to bathe a baby?* Though this is something you'd rather do yourself, there will be times when you'll want the sitter to assume this responsibility. She should be able to prepare the bath and know how to place and handle the baby in it.

10. *Is your baby sitter able to change a diaper?* Every sitter should be able to do this well. Patience, care, and a proper technique are necessary. The joke about sticking a pin in the baby isn't funny.

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Doctor at the Drawing Board

(*Continued from page 32*)

road companies of *Hit the Deck* and *Fifty Million Frenchmen.*

"As a matter of fact, stage work taught me a lot about art. Working on such a large scale you learn to disregard the petty and picayune."

Asked how he came to combine art with medicine, Netter replies: "Well, it was really a lucky series of coincidences. My family," he said with a half-serious smile, "didn't think the life of an artist was an entirely respectable one, and I decided to enter medical school." He specialized in surgery at New York University College of Medicine, working his way through by doing commercial art jobs on the side.

A professor in med school noticed him doodling one day and, looking over his shoulder, was amazed to find the "doodles" were really expert drawings of the subject being discussed. "I've always found I could understand a thing better when I draw it," Netter comments. Urged by the professor, he began to illustrate medical texts. "Then, as later, it was the doctors' enthusiastic acceptance of my work which led to its success."

In 1931, Frank Netter, the new physician and surgeon, entered private practice. It was the depths of the Great Depression and as he says, "There *was* no practice." While Netter was struggling to make a living as a doctor, some pharmaceutical companies asked him to do medical drawings for them. He was astonished at the princely sum he received for his first job ($40). For three years he hesitated between two life courses. It was mail received from doctors praising his drawings that finally persuaded him to leave active practice and devote himself full-time to medical illustration.

"Years ago," he says, "I considered medical illustration simply a little adjunct—a useful device of some value in the teaching of anatomy, surgery, pathology, and other branches of medical practice. But, as the years rolled by, I was impressed with the great interest of the medical profession in good illustrations.

"As I delved into the history of medical illustration, I came to realize that pictures have played a vital role not only in teaching but in the actual development of medicine to its present high levels.

"Before the Renaissance, anatomy

"The milkman? . . . The gasman? . . . Magazine salesman?"

Training the Medical Illustrator

University training in medical illustration has been available in this country since 1911 when Max Brödel (known as the father of American medical art) established the first department of medical illustration at The Johns Hopkins University in Baltimore. Courses are now given at a number of other schools, including: the Medical College of Georgia, Augusta; the University of Illinois, Chicago; the University of Cincinnati, and the University of Texas, Dallas.

Applicants are expected to have a high degree of artistic ability, especially in life drawing, and a knowledge of basic sciences such as zoology, biology, and comparative anatomy. Some schools require applicants to have a bachelor's degree. During his two- to three-year course, the student will have classes in both art and medicine, including dissection in anatomy. There are currently more medical illustrators available than there are jobs, and schools will often accept only a few applicants. This is the case at the University of Illinois.

The curriculum in medical illustration at Illinois was founded in 1922 by a leading medical artist, Tom Jones. It is now a two-year course leading to a certificate in medical illustration. Except in unusual cases, applicants are expected to have a bachelor's degree with a major in art and a minor in science, or vice versa. Admission is restricted to not more than five students a year.

Though training in both art and science is required of applicants, the faculty regards artistic skill as primary. Comments A. Hooker Goodwin, professor and head of the Department of Medical and Dental Illustration: "A good artist can take courses in science and acquire the information he will need as a medical illustrator, but we can't take a student without art ability and make an artist out of him. We don't provide courses in elementary drawing."

During his first year in the program, the student will take courses in histology, embryology, and neurology, and a course in gross anatomy which includes lectures and dissection of an entire human body. On the art side, instruction covers techniques of illustration, such as wash drawing, pen and ink, and crayon. He will also study the preparation of medical charts and graphs.

In the second year, the student will have a course in pathology and participate in projects in anatomy, surgery, and pathology, working from autopsy, operating room, and dissection material. He will be involved in planning, design, and construction of exhibits, and work in clay, wax, plaster, plastic, wood, and metal.

When the student completes the course he will probably join the staff of a university or hospital, or become a free-lance artist working on individual commissions from pharmaceutical houses, hospitals, doctors, and universities. His work will embrace a wide variety of projects: book and poster design; drawing and painting; charts, graphs, and slides; prosthetic devices; scientific and lay exhibits, and stills for movies and television.

A recent survey of practicing medical illustrators shows the average salary of the illustrator just out of school to be $4400 a year; the illustrator with three to five years' experience earns $6600 a year, and the head of a medical illustration department makes $9700.

Further information on medical illustration as a career is available from Miss Rose Reynolds, Corresponding Secretary, Association of Medical Illustrators, University of Nebraska College of Medicine, Omaha 5, Nebraska.

was a subject for debate rather than investigation until Vesalius came along with his description of the human body based on actual observation and expressed in accurately made drawings."

Doctor Netter sees medical illustration as having four important values:

1. It helps the artist understand the material. "Comprehension consists of the ability to visualize the subject," he maintains. "When we say we understand anything we mean we can diagram it mentally."

2. It transmits ideas from the artist to his audience. "Illustrations even help the expert. They show him his subject in a new light."

3. It is a record of scientific observations that is permanent and can be passed along to posterity.

4. Properly used, medical illustration is a valuable teaching device. It was in the Army during World War II that this aspect of Doctor Netter's art came to the fore.

He says, "The Army knew I was a medical illustrator but they didn't quite know what to do with me. For the first six months I did little but sit around playing cards. Finally, I was put to work revising the Army's bulky first aid manual and providing new drawings for it. I made new illustrations showing various wounds and also similar wounds under different circumstances.

"Suddenly they decided everything had to be pictorialized. The Army needed x-ray technicians. This is a job that requires a two- to three-year training period in civilian life." Thanks to the power of pictures to condense information that would require many words, Doctor Netter was able to devise a training manual that cut course time to three months.

Netter emphasizes the importance of good illustration as a part of medical education: "Not only medical

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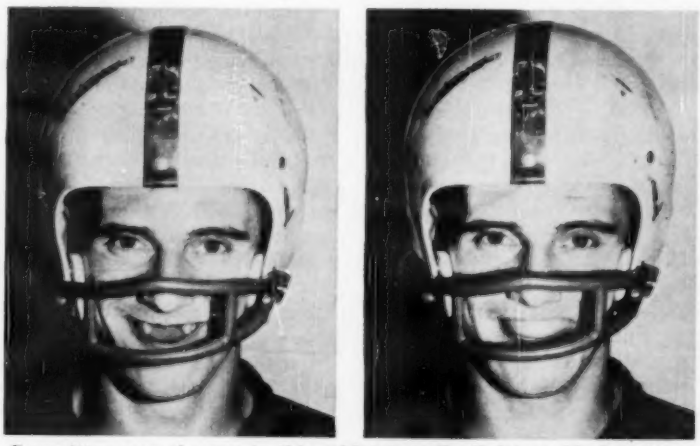
"997, 998, 999 . . ."

knowledge, but all knowledge is expanding rapidly. To keep up with it, we need better teaching methods, more modern means of disseminating knowledge. We've streamlined transportation and building; we should do the same for education. Teaching machines, for example, are part of a big trend toward improved teaching methods. Pictures also have an important part to play; they are a means of getting a great deal of information to a doctor quickly."

In its broad sense, medical illustration is not confined to drawings. It can include animated cartoons, photographs, and various types of three-dimensional models and mock-ups.

Though best-known for his drawings, Doctor Netter was asked in 1939 to design a "transparent woman" for the Golden Gate Exposition in San Francisco. These full-scale models of the human form are a familiar sight today in health museums and fairs throughout the country (including two models which the American Medical Association has prepared for exhibition at larger



Committee says the gap in this athlete's smile (left) could almost certainly have been prevented had he been wearing mouth protector (right).

MOUTH PROTECTOR SAVES ATHLETES' TEETH

A MAJOR "occupational hazard" of contact sports — loss of teeth and other mouth injuries — could be all but eliminated if athletes wore mouth protectors.

This is the conclusion of a joint committee of the American Dental Association and the American Association for Health, Physical Education, and Recreation.

The committee cited football, basketball, wrestling, hockey, lacrosse, and soccer as having particular need for protection. It also noted that women's field hocky results in "a considerable number of injuries." Football led the list; injuries in and around the mouth comprise half of all injuries incurred in that sport.

Although several types of mouth protectors are available, the committee recommended the custom-made, individually fabricated protector as most satisfactory, because "it fits well, is comfortable, and does not interfere with breathing and speaking."

An inexpensive protector can be made quickly and easily by using self-curing latex with a rayon flock, said the committee. The device is fabricated over a cast of the player's mouth made from a dentist's impression. In many high schools and colleges where this type of protector is used, impressions have been taken by volunteer dentists and the protectors fabricated by members of team booster organizations.

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health fairs sponsored by state and county medical societies). Inside the transparent plastic "skin" the body organs can be seen. Each organ lights up in turn to illustrate points of anatomy and physiology which are made by a recorded voice that seems to come from the figure itself.

But in 1939 there were only a few transparent manikins in existence. These were made in Czechoslovakia, had no moving parts, and no recorded narration. Netter's problem was to design from scratch a model that would show the operation of the female endocrine system, describe it in language the general public could understand, and take only 15 minutes for the whole demonstration.

"I worked day and night for six months," Netter recalls. He consulted electrical engineers, other artists, and drew on his own knowledge of anatomy and physiology. When the lady was finally completed she demonstrated the complete menstrual cycle and every 15 minutes produced a foetus that grew to full term.

Netter describes the press preview held at a New York hotel before the model was shipped to the West Coast: "Big names in medicine and art were there. There was a band and speeches. The band was beginning the fanfare announcing the first public demonstration when my mechanic came up and said in a low voice, 'Doc, she isn't gonna work!' "

The horrified Netter learned that while the model worked on A.C. current, only D.C. was available in the hotel. He ran to the back of the manikin and, fortunately, was able to operate it from inside by manipulating levers. The demonstration went off on schedule, but Netter sighs, "I was a nervous wreck. . ."

Since 1946, Doctor Netter has been associated with Ciba Pharmaceutical Products, Inc. His principal work during this time has been the paintings for the projected nine-volume atlas of the human body, *The Ciba Collection of Medical Illustrations.* This staggering undertaking will include 2000 color and black-and-white illustrations showing each system of the body in both normal and abnormal states. Begun eight years ago, the atlas has 1975 as its target date, though Netter says ruefully, "We'll never make it."

Volumes now completed include *The Nervous System, The Male and Female Reproductive System,* and *The Digestive System* (the latter in three books—one each on the upper and lower digestive tracts and one on the liver and pancreas).

Currently on Frank Netter's drawing board is *The Endocrine System.* Ciba sells the atlas at cost, the price varying from $7.50 to $15 per volume. The books are medical best-sellers and orders come from both physicians and laymen. *The Nervous System,* published in 1953, has broken all sales records for medical books with the exception of the Kinsey reports.

The greatest liar in the world is They Say.

—Douglas Malloch

Until quite recently Netter lived and worked in his 24-room house (which he called "Folly Farm") on Long Island. But now that most of the Netters' five children are grown and living away from home, he and his wife, Vera, have moved back to Manhattan. "At last I don't have to drive a car!"

In his spare time, Doctor Netter enjoys fishing in Long Island Sound (for bluefish, flounder, butterfish) and swimming. The margins of his drawing pad are sprinkled with stock market quotations, evidence of another favorite hobby. He participates in community activities and last year was chairman of the Boy Scouts fund-raising drive for his Long Island area. Netter also likes traveling and is fortunate that his job takes him all over the world in search of scientific advice—to Basle, Switzerland; Manchester, England; Sao Paulo, Brazil.

Netter produces about 100 paintings a year working at home in a spacious studio having a north light. Volumes of medical reference and built-in cabinets for storing art materials line the walls. The room is dominated by that symbol of the practicing artist, a drawing board and desk littered with paints, drawing pencils and paper, water jars, and sable brushes. He starts work at eight in the morning, finishes at 4:30 or 5:00, doesn't like night work. "If I'm rushed I just start earlier."

Asked if he enjoys his work, Netter gives a working-man's answer: "Well, kids come to me all the time for advice about medical illustrating as a career. They have the idea it's an easy, glamorous life. They baffle me. It's a job that requires intensive training in both art and medicine. You have to work like the devil. The rewards depend strictly on the individual's efforts and ability. My son, Jimmy, once told me he didn't think he'd enjoy medicine as a career. I told him making a living is not all enjoyment. A certain amount is just plain work. But I guess I wouldn't sit here all day long if I *didn't* enjoy it."

END

"Babies and Breadwinners"

"BABIES AND BREADWINNERS"—that's the theme of this year's anti-polio campaign sponsored jointly by the U.S. Public Health Service, the National Foundation, and the American Medical Association.

It is an apt phrase; in 1960, these two segments of the family were hit most severely by paralytic polio. Almost half those paralyzed by the disease were under five years, and young adults were among those most seriously paralyzed.

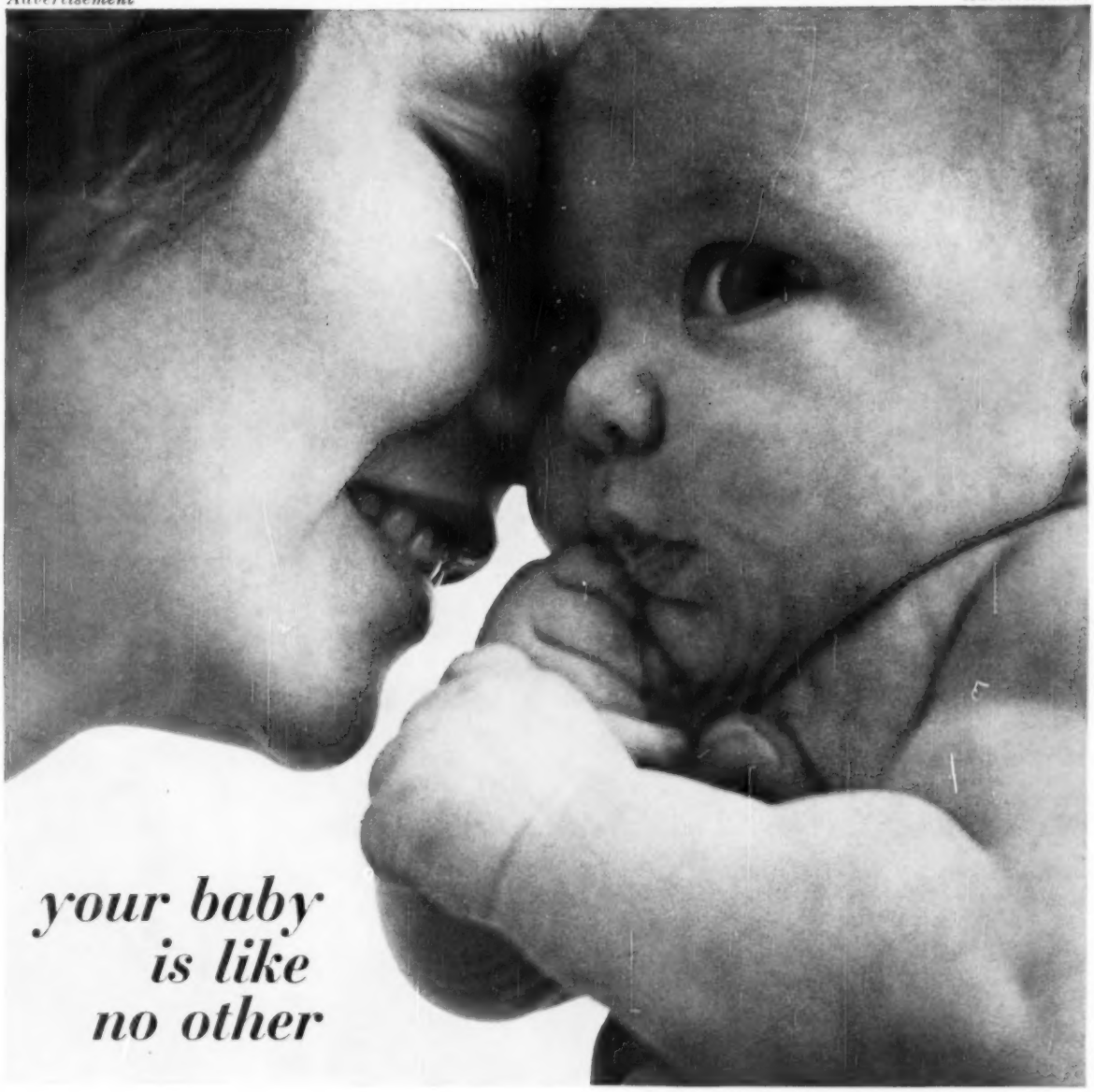
Paralytic polio in the United States declined from 6289 cases in 1959 to 2265 cases in 1960. This is great progress, but, warns the USPHS, Americans cannot rest comfortably as long as 40 percent of the population is not fully vaccinated against polio. This figure includes

—38 percent of children five years and under.
—63 percent of men aged 20 to 40.
—48 percent of women aged 20 to 40.

As long as "islands" of unvaccinated persons exist even in well-vaccinated communities, polio epidemics remain a serious threat.

The USPHS recommends the following schedule of Salk vaccine shots for everyone except infants under six months:

—The first shot, NOW.
—The second shot to be given one month after the first.
—The third shot, seven months after the second (or before the next polio season).
—The fourth shot, one year later.



Even though parents know their baby best and have a natural capacity for taking care of him, your doctor has the training and experience that qualifies him to take responsibility for matters affecting the baby's nutrition and health.

Your baby is truly an individual, and he has individual needs—particularly in matters affecting his health and well-being. When it comes to the baby's nutrition, the doctor is, of course, well qualified to choose the foods which the baby should eat during early infancy, because the doctor best knows the baby's physical make-up, limitations and requirements. He also knows which foods, and in what combinations and quantities, are most suited for the baby's health and growth.

Sometimes parents decide for themselves what foods the baby should eat, without consulting their physician. Their belief in what is best for their baby usually comes from advertising for such products. This can result in difficulties (not always immediately apparent), and it is then only when difficulties occur that the physician is called in.

Surely this is a risk no parent would knowingly take. The time to consult the physician is before selection of your baby's foods. Then leave the choice of food and time of feeding to him. That is why many companies who manufacture the baby's first foods advertise only to the physician. They leave to him the decision about a baby's feeding, and advise parents to do the same.

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